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Tradables in Rural Economies: A Development Analysis

In Alberta, Nebraska and Sonora

by

DAVID FREDERICK FULLERTON

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfilment of the requirement for the degree of Masters of Science.

In

Agricultural Economics

Department of Rural Economy

Edmonton, Alberta

Spring 1995

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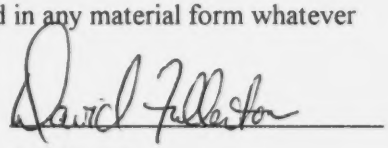

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research for acceptance, a thesis entitled Tradables in Rural Economies: A Development Analysis in Alberta, Nebraska and Sonora submitted by David Frederick Fullerton in partial fulfilment of the requirements for the degree of Masters of Science in Agricultural Economics.

(Dr. Leonard P. Apedaile, Supervisor)

(Dr. Terrence S. Veeman)

(Dr. Rolf Mirus)

Date: Jan 31/95

ABSTRACT

This research is an examination of the rural tradables goods and services sector of three distinct rural economies in Alberta, Nebraska and Sonora. It is an exploration of economic relationships and implications for economic alliances of tradable enterprises. Predator-prey systems theory integrates aspects of development, trade and export, and entitlement and transaction cost theory.

The results indicate greater similarities between the Alberta and Nebraska systems than with the Sonoran economy. Firms are of similar sales volume and asset valuation in Alberta and Nebraska. Their workforces have similar educational levels. The Sonoran system is comprised of smaller firms with a less productive and less educated workforce. The Nebraska firms have the highest labour productivity levels.

This is no specialisation in any of the three economies from which to develop tradables with an established competitive advantage. However, the workforces of Alberta and Nebraska, in contrast to the those in Sonora, appear to be flexible in their education levels and household incomes. These qualities ease adaption to new processes.

Rural alliances combine strengths and entitlements of compatible enterprises to expand sourcing or marketing into new areas. Three types of alliances were examined: financial, process and strategic. These alliances enhance scope for flexible production strategies to improve adaptability of rural places to market demands. Financial alliances offer the greatest benefit to Sonoran firms seeking expansion or economic survival. Alberta and Nebraska firms would benefit most from strategic alliances to overcome market, personal

and transactions cost obstacles to expansion. However, unfamiliarity with these new types of business structures and potential mistrust with competing firms and owners may limit the effectiveness of alliances for rural tradables development in the near term.

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Finally, my greatest thanks goes to my wife, Crystal, who has waited patiently and provided much needed support during the past two years. Now we can get on with our lives.

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Chapter 1 Introduction

1.1 Problem Definition

Rural areas in the Canadian Prairies are undergoing economic changes resulting from the declining role of primary agriculture and other resource extractive industries in income generation and job creation. This thesis examines the role for other tradable goods and services in the light of liberalizing global trade and explores possible means to expand this sector of the rural economy.

Rural is no longer synonymous with agriculture in Canada and other OECD[1] countries. Farmers have become a minority in rural villages and rural people are employed more and more in the secondary and tertiary sectors of the economy (Bollman 1992, Flora 1988, Galston 1993, OECD 1993). Restructuring of the formerly agriculturally dependent rural prairie economy has resulted from several factors. Foremost is technical innovation which has promoted a capital for labour substitution. Consequently, fewer people are required to farm increasingly larger land bases. Market forces and government intervention in the 1980's forced declines in the prices of the generic produce grown on prairie farms. This, in turn, accelerates this substitution as farmers seek to increase productivity in an attempt to achieve economies of scale. Those who were unable to change were marginalized.

This restructuring of the agricultural sector has had profound effects on the rural economies of the Canadian Prairies. Direct employment in farming has declined as has employment in agricultural services. Communities built upon servicing the farming sector have experienced declines as a result. Populations have decreased and average age has increased as younger people migrate out of rural areas in search of employment (PFRA 1992a, 1992b). A tendency to economic prey status for the rural economy and the relative decline of traditional rural industries have the effect of closing the rural economy. Closing means that business is not involved in selling beyond the community boundary. Closing

---

[1] OECD is the Organization for Economic Cooperation and Development.

chokes off growth and opportunity, chasing off youth, devaluing retirement assets, locking in seniors, removing public services and reducing commerce sales volume to uneconomic and uncompetitive levels.

Restructuring is the basis of economic development. However, this process is difficult to accept in many industries and economies. Liberalising rules of trade are one of these restructuring processes. The problem for rural places and other developing and disadvantaged economies is to adapt to these changing rules. The inequities found among developed and undeveloped urban and rural economies mean that restructuring processes will be different for each situation. This thesis is an examination of restructuring from a predominantly agriculturally-oriented economy to other tradable enterprises. The premise is these industries can replace agriculture as a viable means of sustaining rural communities. The research is a comparative examination of the nature of rural economies through the relationships firms hold with external suppliers and customers as well as their internal relationships. Three rural economies, one in each of east central Alberta, east central Nebraska and northeast Sonora, are studied. Economic relationships of sales, trade, assets and employment are examined. Systems theory is the basic theoretical framework used to tie the rural system to the rest of the liberalizing trade world. This research explores methods and institutions which can be used to ease the transition to globally competitive rural industries and economies.

1.2 Objectives

The objectives of this research are to:

1. Compare the tradables structure of a "representative" Canadian prairie rural economy with similar economies in the United States and Mexico.

2. Explore strategic, process, trading and financial alliances between rural tradable businesses and places as a means to increase the competitive advantage of rural economies.

3. Examine economic relationships which are influential factors on the ability of tradable enterprises to create wealth for themselves and the rural economy.

4. Examine and contrast obstacles perceived to be constraining the performance of rural tradable enterprises.

1.3 Organization

This thesis is organized into six chapters. Chapter One is the introduction consisting of the problem statement, the objectives of the research and the organization of the thesis. Chapter Two reviews the theoretical underpinnings of the research. This chapter reviews relevant topics in systems and predator-prey theory, development theory, trade and export-base theory, and entitlements and property rights theory. Chapter Three reviews the areas of study and data collection procedures. Chapter Four discusses data analysis as it pertains to the trade orientation and employment of the tradables enterprises. Entitlements and transactions costs are examined as features of the structure of this sector. Chapter Five discusses the results of this research in the context of a rural development strategy based on expanding the tradables sector of rural economies. Trade, human resources and alliances are featured. Chapter Six summarizes the findings of this research and presents suggestions for further research.

Chapter 2 Theoretical Arguments

Four lines of the theory underlie this research. They are systems and predator-prey theory, economic development theory, trade and export-base theory, and entitlements and property rights theory. None of these in itself constitutes an exclusive base to understand the complex relationships involved in expanding the tradable goods and services sectors of rural economies. However, together they provide a basis for understanding and interpreting the economics of a trading rural economy. This chapter is divided into four sections which cover each of these theoretical components.

2.1 Systems and Predator-Prey Theory

Systems theory provides the framework for this research. This approach is an alternative to the neoclassical convention of reduction of a whole to individual and separate pieces. Reduction may obscure essential features of the entire economy. The systems approach is a holistic treatment of forces interacting and relating separate economies. In this context, the rural economy is treated as an economic system among others. It may constantly interact with other systems such as other rural or urban economies, both domestic or international.

The purpose of systems theory is to explain interactions among systems and their environment. The rural economy is an open system, interacting with the ecosphere, other rural systems, urban systems and international systems. Exchanges of goods, services, energy and information continuously and discontinuously modify the behaviour and the relationships of each system to the others (Checkland 1981). The rules governing exchange form the basis for economic, social and political institutions. The extent of the system's openness varies among economies depending on the form and behaviour of these institutions expressed as political regime, economic policies and cultural heritage.

The rural economy is also a human system. A human system has a state description and a purposeful activity. According to Checkland (1981), the state description describes the elements which comprise it, their current condition, their relationships with external

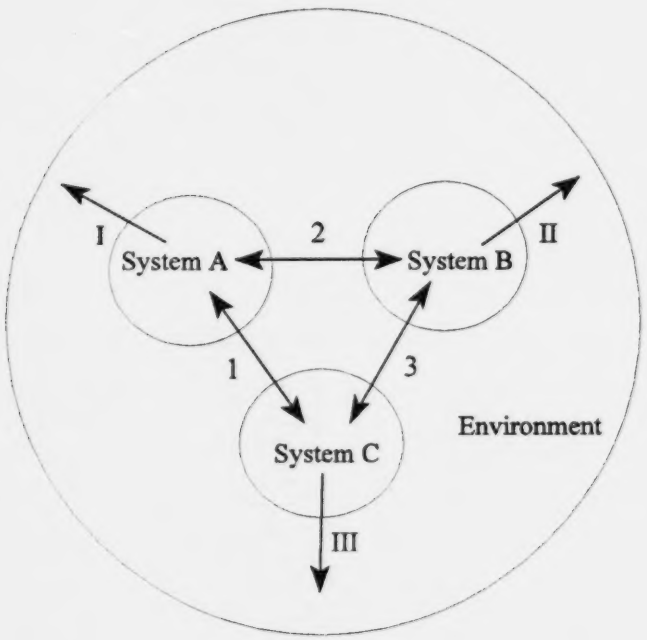

Figure 2.1. Rural and non-rural economic systems interactions.

elements which affect the system, and the condition of those external elements. A purposeful activity is one in which the system itself transforms inputs into outputs. In this context, this research describes the state of three comparable trading rural economies and examines possible transformations into greater tradable activity.

Figure 2.1 is a conceptualisation of the rural system and interactions with other systems. Each system in this figure represents a separate economic system with its own internal rules, tradition, and vision. System A may be a rural agricultural system, interacting with a rural business system, B, perhaps in another country, and an urban system, C. The relationships among systems are governed by their own internal norms and rules (*oïkos*) and by external rules, such as national and international laws and regulations (Schilizzi and Apedaile 1993). *Oïkos*, defined in terms of systems analysis, is "the set of institutions and rules that governs learning, memory, definition of purpose, heritage, treatment of uncertainty, and in particular, the limits of predation" (Anderson et al 1994).

The exchange of goods, services, energy and information, represented by the arrows, are in a state of constant flux, and determine the dynamics of the economic situation. Businesses and communities within each system are affected by what happens in the other systems. These entities react to changes, shifting input and outputs to meet the opportunities or constraints of the other systems. Over time, these three systems may coevolve in a dynamic relationship with one another.

The arrows numbered I, II, and III represent interactions with other systems in the world. The world represents the environment in which systems evolve. Without arrows I, II, and III, the three systems are affected only by each other. Liberalizing trade changes the interactions represented by these arrows and affects the behaviour of each system. New flows of goods, services, and information take place and the dynamics of 'internal' relationships are changed as barriers to trade are reduced. The formerly closed group of three systems are not only exposed to goods, services and information coming from other systems but are also opened to opportunities. The group of systems, A, B and C, coevolve again in reaction to these new flows. This process of revising the relationships among systems or their parts, which is often associated with rescaling the proportions of the system, is called restructuring.

Rural restructuring is an adaptive response to economic, social and ecospheric influences and signals. The development of tradables in each system is influenced by the behaviour of firm owners, communities and governments in response to signals from many types of institutions which govern relations within the *oïkos*. Market forces such as supply conditions and market prices are usually outside the control of individuals and firms yet can be anticipated or managed. Cultural influences such as community censure, which are based on the *oïkos* of the system, can impede certain types of business startups as can ecological constraints, such as natural barriers or imposition of environmental standards by government institutions. The manner in which firms react to these outside influences directly relates to the success or failure of tradables development. Strengthening ties between systems, arrows 1, 2 and 3, means these systems can react jointly to external

stimuli and forces that may be individually beyond their control.

The openness or closedness of particular systems also influences the adaptation of more tradable activities. Fully self-sufficient closed systems generally will not be amenable to development of new tradables nor will they need to be. The greater the openness, the more opportunity for tradable activities. The flows of goods, services and information which is a reflection of open economies are continual stimuli to begin new or upgrade existing enterprises. The degree of openness is also a reflection of the type of relationship between systems.

2.1.1 Competition, Predation and Co-operation

Relationships among economic systems may be characterised in a predator-prey system framework encompassing three types of behaviour: competition, cooperation and predation. As described by Schilizzi and Apedaile (1993), "Competition is a win/lose (+/-) relationship; predation is potentially win/win (+/-/+); and co-operation is win/win (+/+)". The mode of behaviour displayed by a system may shift under changing circumstances. A system may exercise all three modes simultaneously when viewed across all its relationships with other systems.

With competitive behaviour, systems and their individual firms compete for scarce resources and market demand. Perfect competition equilibrates supply and demand, maintaining the existence of many similar competing producers and consumers. However, there are usually market imperfections, such as imperfect knowledge, which mean this point of equilibrium is rarely reached. Under such conditions, competitive behaviour creates situations of repetitive cycles of increasing efficiency, oversupply and falling prices which force down the returns for each competing system. In the long run under competitive conditions, there can only be one winner as the losers are driven into extinction. At this point, there exist opportunities for monopolistic rent extraction from consumers by the survivor.

Competition normally cannot be sustained. The demise of other systems often puts the

winner in jeopardy. Inertia prevents the sole remaining system form adapting to new market demands. This lack of adaptation can prove to make the monopolist irrelevant to new consumer demands. Competition appears to be possible only in a transitory sense, useful for short periods in long run predatory development strategies.

Rural development under competitive conditions presupposes that the rural system is the low cost-high volume provider of goods and services and is able to economize on volume production and marketing. In most rural systems where artisan processes using labour intensive processes are predominant, often the opposite is true. Artisan production and services are subject to diseconomies of size (Apedaile et al 1993a). Lacking the ability to continually reduce per unit costs to match its competitors, the rural system loses in competitive relationships.

Predation may be a more useful characterization of the behaviour that rural systems encounter in an open economic environment (Apedaile et al 1994, Apedaile et al 1993a, Moore 1993, Schilizzi and Apedaile 1993). Predation characterises the relationship between a predator system and a prey system. In this situation, the predator understands that its survival is conditional on the survival of the prey. The successful predator will not create the conditions that jeopardize the prey's existence.

Price takers are considered to be in a prey position. Artisan rural systems are prey systems in many of their economic relationships. System C in Figure 2.1 relates to agricultural system A and business system B through economic information and energy flows 1, 2 and 3. The non-rural system C depends on production from the rural systems A and B. If A or B is dependent on C as the market, both A and B are in a prey position to C. C is positioned to dictate the shares of value-added in its transactions and extracts economic rent from both A and B. In an open trading economy, C would not be so strongly positioned because A and B would also be able to trade with their outside environment, the rest of the world.

The prey status of many rural systems is exemplified by the situation faced by the sector

most identified with it: agriculture. Agriculture is perceived as commodity production, whether it is wheat, cattle or bananas. In the aggregate, prairie agriculture produces relatively undifferentiable generic products, for which, collectively, opportunity costs are low. The production oriented farmer has little control over the pricing of these products. This places much of commodity producing agriculture in a prey position. The prey is reliant on intermediaries to market the output. These transaction intermediaries may act as predators, gaining a portion of the rent earned by the labour and natural resources of the agricultural community by controlling the downstream of the producer-consumer chain. Examples of this phenomenon include the broker, wholesaler and retailer roles in the marketing chain.

Predation is a sustainable behaviour among systems as long as the mutualism between predator and prey is clearly understood (Apedaile et al 1993a). Rural economic development based on predation as opposed to competition is considered to be a strategy to increase rural predatory ability and thus reduce its prey status relative to the rest of the world. The goal is to extract an increasingly larger rent for rural resources without jeopardizing the consuming economy or sending the consumer to another producer.

The third type of behaviour among systems is co-operation. The switch from a competitive to a predation relationship may be viewed in terms of co-operative behaviour. Two co-operating systems can improve competitive and/or predatory positioning relative to a third system (Schilizzi and Apedaile 1993). The requirement for co-operation is that the increased resource flow or returns, usually economic rents, must be shared and therefore must be greater than the sum of the separate returns before co-operation. Like competition, cooperation appears to be a transitory form of behaviour, collapsing when resource flows or rents stop increasing or shares fall below what appears to be possible in new predatory or competitive opportunities. In this context, trade liberalization may be seen as a strategic challenge to alliances built on cooperation as liberalisation changes the rules which protect or govern cooperative earnings.

2.2 Development Theory

Development theory seeks to explain wealth creation and growth through productivity and predation. Classical economic concepts such as rent, wealth and income are revisited as means to gauge development efforts.

The ability of people to purchase goods and services beyond basic subsistence levels is determined by their stock of wealth. This stock is derived from three sources: "the rent of land, the wages of labour, and the profits of stock" (Smith 1776). Income is the parallel flow concept to the stock of wealth. In this research this limited view of wealth is expanded to include the rent of human talent and other productivity enhancing attributes of humans. This research examines wealth derived from the use of more productive resources and its retention by firm owners and employees in the form of owner's rent and employee income.

Development theory examines the process of creating wealth by the progression of an economic system to industrialisation from agriculture as it evolves over time. Much of the origin of, and evidence underlying, development theory has been gained from studies of resource extracting economies and lesser developed countries. The reader is directed to Hayami and Ruttan (1985) to explore the many issues involved in this progression.

Development theories focus on technological improvements in labour-saving capital and land-saving industrial inputs to increase labour and land productivity, respectively. Labour productivity is understood to be the basis for higher incomes. Land productivity is the basis for expanding food and fibre production. Both processes release labour. In the absence of active manufacturing or service industries, both processes in rural economies must rely on the availability of alternative employment in such resource extracting industries as agriculture, forestry, fisheries, mining, and oil and gas to absorb underemployed labour as it is released.

Until recent decades, agriculture has represented the primary means of economic development in the Prairie provinces. Technological change and productivity increases

have reduced the labour requirements of farming, resulting in depopulation and outmigration as labour seeks employment elsewhere (Bollman 1992, PFRA 1992a and 1992b). Outmigration has highlighted the dependency of these rural systems on the fortunes of this one sector.

Agriculture creates wealth by combining the resources of the ecosphere and human ingenuity to produce a commodity that is valuable to other people. Manufacturing and services create wealth by combining manufactured inputs and intellectual knowledge into more valuable products and services. The return to the household includes an economic rent attributable its own resources, land and intellectual property. For the rural economy, the combined rents of all households and business activities is the rent to that economy. In a systems context, the rural economy creates wealth by combining resources from itself and other systems.

2.2.1 Productivity

Rent arises from the productivity differential between two resources of different capacities. The productivity of human resources determines employee wages while the productivity with which capital is employed determines the return that it earns (Porter 1990). It is implied for rural firms and economies that greater rents can be extracted by utilising resources of greater capacities and with greater recovery rates. In the context of this study, these resources are naturally endowed land, water, climate, minerals, and forests and human energy, talent and skills. The rent accruing to the intellectual property, talent and skill capabilities of humans enables the employed population to remain in the rural community with incomes exceeding the low income cutoff established as a "poverty line" for basic necessities by Statistics Canada.

The wealth of the rural economic system has been characterised by the rents extracted by its farming, forestry, fishing, mining and energy activities. However, the undifferentiated commodities produced by these industries have become relatively less valuable to the rest of the economy. Consequently, wealth creation in the rural economy has tended to

stagnate or decline, particularly when the resource base has not been sustained.

Growth is critical to this wealth creation. Growth is the sustained increase in economic output due to increases in factor use and productivity as well as improved placement of the output in profitable markets. Growth is producing more of the same in the same manner while development is the creation of new products and services (Flammang 1979) and a restructuring of relationships within the system.

Growth occurs in two ways. The first is the increase in the physical size or number of units of production. Thus, agricultural production has increased in much of the developing world, and historically in Canada, by an arithmetic increase in the land base under cultivation. Limits to growth are reached when the maximum number of arable hectares are in production. Classical economists such as Malthus and Ricardo (1817) viewed this as a limit to population increase and wealth accumulation.

The second means to growth is through productivity gains. Artisan production, which characterizes much of agricultural and traditional goods production, is process-, place- and ecosphere-specific, although not necessarily all three. Capital for labour substitution is often cited as the basis for productivity increases. Mechanisation of production processes is an example of this substitution which changes artisan production into a more industrialised system. The industrialisation of farming, reducing the dependency on the specific knowledge and physical abilities of the farmer, has realised substantial expansion in production per unit of land at the same time as it has released labour. Changing the structure of tradables, and thus predation, in the rural economy requires a similar transformation from artisan to industrial processes (Apedaile et al 1993).

The nature of production systems also affects development. Artisan production processes are, by nature, prey systems. The difficult processes involved in increasing productivity create the conditions for reliance on other systems for sourcing of factors of production, production enhancement and sales of the output. It may sometimes be easier to resist change rather than adapt production processes to take advantage of higher productivity

processes (Porter 1990). This reluctance to change is characteristic of prey systems. However, the very nature of liberalising trade imposes change on these systems, such as the reduction of protectionist tariffs within the NAFTA agreement (Chambers and Raworth 1993, Loizides and Rhéaume 1993). Those best able to adapt production and take advantage of increased opportunities to trade with the rest of the world may also be those most likely to survive.

2.2.2 Structure and Development

Structural attributes are used in much of development theory to describe the growth and productivity of economies. The structure of an economy and its firms has been hypothesised to affect directly the ability to compete with rivals, withstand predation and ultimately thrive (Hayami and Ruttan 1985, Krugman 1993, Isard 1990). Attributes of this structure vary widely but include measures of the productive use of assets, capital-labour ratios and distance to market.

The importance of industry structure to an economy may have been overstated in development theory. Competitive advantage, an important factor in development of an economy, may have little to do with structure. Instead, competitive advantage may lie in the human factor and its ability to manage change. This component has been particularly important to writers in the business development literature (Beck 1992, Loveman and Sengenberger 1990, Piore and Sabel 1984, Porter 1986, Traxler and Unger 1994). These authors stress that the managerial ability of economic systems is as important, if not more so, as any economic structural parameters for creating growth and development. This importance of the human intellect component of tradable enterprises may also have a greater effect on the trade capacity than any measure of the physical size of the firm.

2.3 Trade and Export-base Theory

Trade and export-base theory examines the concepts of tradables and nontradables as they relate to incomplete specialisation and flexibility in the developing economy. The primary effect of trade is on the level of economic activity. Trade is a better engine of growth for

rural economies the more it enhances the utilisation of capital, increases factor productivity, in this case human productivity, and the more it improves terms of trade based on predation and rent extraction in relations with other economic systems. Rural household and small business enterprises combine the available capital, labour and intellectual resources of rural systems. The limited markets in rural communities require that these enterprises trade with other systems to achieve economical rates of productivity and resource utilization.

Trade and development for small economic systems such as rural economies are intrinsically linked. Small economies do not possess all the resources necessary for self-sufficiency. Goods and services are exported from the economy and other goods and services are imported. Trade is the flow of material, energy and information represented by the arrows in Figure 2.1. Thus, trade analysis is inextricably linked to the systems approach.

Trade is affected by the productivity of an economy. Trading firms tend to produce only those goods and services where they are more productive than foreign rivals. The system imports when its firms would be less productive than foreign firms. The development of highly productive firms and the dissolution of those less productive than foreign rivals raises the average productivity level of the economy (Porter 1990). Imports are paid with the rent which is retained by the remaining trading firms and their employees.

Trade is also linked to growth and development in the rural economy. Agriculture has historically been the economic engine for rural areas on the prairies. Commodities, primarily unprocessed grains and livestock, have been exported to domestic urban and foreign markets. In turn, industrial inputs such as machinery and fertilizers have been imported. Continued growth and development of the rural economic system rests on maintenance and expansion of these and other linkages to external economic systems.

2.3.1 Nontradable Versus Tradable Outputs

Growth and development occur in two types of economic activities: nontradable and

tradable goods and services. Whether a good or a service can be considered as tradable or nontradable depends on the costs of getting the particular product or service into an economic transaction. To a large extent, this process is idiosyncratic. Evans (1989) points to the example of refrigerated beef. Before the advent of artificial refrigeration, beef could only be sold within a limited distance of the slaughterhouse consequently limiting the size of the slaughter facility to what was needed for the local market. The development of technology for refrigeration permitted beef to be transported greater distances without spoilage, allowing the modern packing industry to develop. Refrigeration reduced the cost of the transactions between the places of slaughter and consumption. Economies of size achieved at the packing plant encouraged further use of new technology. Thus, a good which was essentially nontradable in the national context became tradable as the transaction costs of transport and spoilage were lessened. Transaction costs are discussed in section 2.4.

Nontradables are goods and services whose costs of transaction beyond the place of production are such that, over a relevant range of relative price changes, they never enter into trade (Evans 1989). Transport costs are just one of the many kinds of transactions costs. Examples of nontradables include services, such as rural commerce, where consumption is not separated from the provision of the service.

Alternatively, tradables contain value-added which exceeds transport and other transactions costs, over a relevant range of prices. Most exportable commodities fall into this category as do some consumer and producer services, such as law, accounting and consultation services.

Tradable sector firms contribute new wealth in an economy by exporting goods and services. They retain wealth by substituting for those goods and services which would otherwise have been imported (Corporation for Enterprise Development 1989). Thus, the two roles for tradable firms are exporting and import substitution. Nontradable sector firms, however, while not necessarily creating new wealth, are critical to the recirculation of the inflow of funds through the multiplier effect.

2.3.2 Comparative Versus Competitive Advantage

Export-base theory is founded on the notion of converting immobile resources, whether they are natural, physical, intellectual, labour or capital, of a region into saleable products and exchanging them for goods the region is unable to produce (Myint 1984). This theory also predicts that growth in nontradable activities is limited ultimately by growth in tradable activities.

For a rural area, small in population but with widely varying demands, the decision of what to produce involves the choice between import substitution, whether to produce goods for rural consumers at home, or export production of goods or services which can be exchanged for the desired imported consumer goods from outside the system. Comparative and competitive advantage provide guidance to the rural system in making these choices.

The Ricardian model of trade and the Heckscher-Ohlin theorem emphasize that comparative advantage lies in the production of commodities that use a large amount of relatively inexpensive and plentiful factors (Staley 1970). Natural resource endowments often are the root of comparative advantage, as are low relative labour costs (Evans 1989, Porter 1990, and Ricardo 1817). Comparative advantage leads to specialisation in production depending on the specific relative factor endowments. These specific advantages are often fleeting and can be supplanted by other economies. A classic example occurs in labour intensive manufacturing. Low relative labour costs are generally cited as a critical factor in the Japanese economic success story. The success of the Japanese economy caused upward pressure on wage rates. Over time, lower relative labour costs in Korea attracted firms using labour intensive and low skill technology to locate production facilities in Korea. In turn, lower labour costs are now available in other Third World countries. Those same firms which moved production to Korea are now moving it again to Thailand and other less expensive economies.

The difficulty with comparative advantage lies in the specialisation which it creates.

Specialisation in production, once begun, tends to remain in place even when there is no longer a comparative advantage. Uncertainty with new processes, inappropriate or outmoded human skills and lack of information on other systems tend to cause stagnation. This may be particularly true for rural systems which have tended to be more closed than urban economies.

The development of the prairie rural economy has centred on the relative abundance of inexpensive land and labour with low opportunity costs. The western provinces have been said to have a comparative advantage, and have specialised, in cereal and cow-calf operations. However, technological change has altered the structure of agriculture. Mobile labour can, and does, seek higher wages in off-farm jobs or by migrating out of the rural areas. The high opportunity costs of further cereal and cattle production forces capital to seek better returns outside traditional rural activities.

Comparative advantage is becoming less important as globalization has allowed greater access to these classical factors of production. Rents associated with abundant resources tend to be minimal. Firms are able to shift production to areas with ever cheaper resources. For example, timber production based on virgin forests can be physically moved to countries with lax environmental standards and low stumpage rates from countries imposing costs of sustained yields on timber harvesters.

In contrast to comparative advantage, competitive advantage lies not only in abundant and low cost resources but also on entitlements which enhance the ability of firms to extract rents from the market for the resources that have been used in production. Competitive advantage is achieved by firms or conferred on them as opposed to having a naturally endowed resource cost advantage. Such advantages as differentiated products, differential knowledge and skills, proprietary technology, sustained learning culture and specialised government assistance programs are not easily imitated. These advantages are found in the skilled people and organizational structures of business and economic systems. In the context of systems, open systems are more amenable to competitive advantage. The open structure presents greater opportunities to access information and entitlements within

other systems' *oïkos* with which to enhance competitive advantage.

Conversion of potentially tradable goods and services to actively traded status involves enhancing the competitive advantage of the particular product or service. Many tradable goods or services are not traded because the transactions costs are prohibitively high, preventing them from being traded. Services such as commerce, where the cost of physically moving the service to the customer is high, are typically nontradable for this reason. Creating the climate for tradables conversion involves reducing the barriers and consequent transaction costs which prohibit trading activity. Cost-reducing proprietary technology or skilled and productive labour encourage tradables conversion because they are not easily imitated and thus are rent earning.

2.3.3 Specialisation

Comparative and competitive advantage theoretically lead to complete specialisation in production as the resources are used to their greatest productivity. These resources include not only the physical inputs to the production process but also organizational arrangements and specialised skills and facilities. An inertia to economic adjustment is created by these factors as firms, labour and community resist tearing down the physical infrastructure, retraining and continuing education, and changes in management. In reality, specialisation requires flexibility of production in rural economies because specialisation can rarely run its full course to completion.

Incomplete specialisation is more generally the case in all economies except possibly the very smallest. The size and complexity of an economy can determine the degree of specialisation (Evans 1989). In small economies, such as those studied in this research, specialisation in production and its returns are dependent on the terms of trade with larger economies. If there is incomplete specialisation in the larger economies, the terms of trade will be governed by the internal rules and terms of trade in the large economies. (Evans 1989). This places the small economy in a prey position which degenerates into inflexibility and increasingly greater reliance on the predator system for survival, whether

it is the urban consumer, an international market or subsidization by income transfer. Examples are numerous in such resource extracting economies as Newfoundland (groundfishery) and Saskatchewan (wheat).

Incomplete specialisation is a production response to long term price relationships. It is a result of changing specialisations as a system coevolves with other systems. The changes in rural economic specialisation, for example to manufacturing from agriculture or other primary sector activity, is part of economic restructuring. Specialisation shifts as the relative prices of resources, labour wage for example, change over time. Resources shift from activities with low productivity employment, competitive disadvantage and low opportunity costs to more advantageous rent gaining opportunities.

Incomplete specialisation of a rural system experiencing liberalising trade may be expected to create oscillations in the growth patterns of the shares of wealth of those holding entitlements (Apedaile et al 1994). It is these oscillations, generated by economic systems coevolving, which create havoc in employment in economies which are restructuring. However, flexibility in production enables the system to coevolve and persist with other larger economies. Flexibility permits changes in the terms of trade to be counteracted with changes in the production technology, methods, output and organizational structure (Piore 1990). Inflexibility inevitably leads to the decline of wealth.

Flexible production can be considered as a precondition for incomplete specialisation. According to Piore (1990), the intent of flexible production is to increase the efficient use of available resources. Moreover, the goal should be the creation of wealth, through rent accumulation, producing goods and services which are high valued. Regardless of where the production occurs, the goal for rural tradables development should be the retention of a large share of the rent earned through the production and marketing process. Thus, the focus should be more than simple production efficiency and sale of the product or service. A prey system needs to place a greater emphasis on the predator's aim of rent maximization. At the least, the rural economy should seek to reduce rent leakage from the system.

Diversification differs from incomplete specialisation. Diversification is a strategy to manage uncertainty rather than one to develop an economy. It does not respect the decision rules of comparative or competitive advantage of economic activities, as does specialisation. Specialised activities should be based on abundance of relatively inexpensive factors, favourable terms of trade, manageable transactions costs and a flexible economic structure to accumulate wealth. Diversification, by contrast, simply attempts to act as a buffer to competitive and predative pressures from outside the system.

Value-added is a predatory strategy which acts as an adjustment to the long term price relationships lying behind incomplete specialisation. The aim is the retention of a relatively greater proportion of the rent accruing to the fixed assets of the rural economy. An example is the crushing of canola in Alberta to extract the oil instead of shipping the raw seed to export markets. The rent accruing to the resources at the crushing facility remains in Alberta in rough proportion to the financial equity held by Albertans. This strategy is not diversification into food processing or canola oil manufacturing but rather is a specialisation in a rent extracting activity. This type of specialisation must obey signals of competitive advantage. Value-added enterprise is more sensitive to transactions costs and changes in consumer tastes and preferences the closer the output approaches the status of a final demand good or service.

Terms of trade also influence the returns to the factors employed in the rural system. The Stolper-Samuelson theorem of returns to trade states "an increase (decrease) in the relative price of a commodity will raise (lower) the returns to the factor used intensively in producing that commodity in terms of all prices" (Evans 1989). As one goal of rural development is to retain the human populations in rural places, this theorem implies that the return, the combined wage and rent earned by human employment, is directly related to the terms of trade for the commodities and services produced by these humans in that place. If the price of the rural output declines relative to all other output prices, the return to the factor used most intensively, often the human component, falls as well, signalling a need to change specialisation.

Terms of trade and relative prices can be influenced through entitlements, property rights and transaction costs. These may lead to less emphasis on complete specialisation and comparative advantage and more on incomplete specialisation, flexibility in production systems and predatory growth strategies.

2.4 Entitlements and Property Rights Theory and Transactions Costs

Viewing the firm as a means to access entitlements and property rights, rather than the traditional view of a collection of production and marketing activities, allows rural systems to reduce predation by extracting a greater proportion of the rent accruing to the resources of the firm. Transactions costs separate entitlements of firms and systems. Reducing transactions costs also creates the conditions to enhance the predatory nature of rural systems.

2.4.1 Entitlements and Property Rights

The firm can be viewed as a bundle of entitlements (Coase 1937). Expressing the firm in this way allows a broader understanding of its purpose and activities and the means of enhancing its interest in productivity. The purposes of the firm, then, go far beyond the output produced or the sum of the individual inputs or components of the product, such as labour, materials, capital and public services. The purpose of the firm includes a continual pursuit of new and better entitlements. This quest has the consequence of improving the returns to the firm and explains the element of predatory behaviour in most enterprises. Economic systems, as agglomerations of firms and individuals, are therefore an amalgamation of all their entitlements.

Property rights affect the behaviour of the firm (Grossman and Hart 1986) or economic system. The sale of a product or service is a transfer of property rights between the owner of the inputs and the buyers of the final product (Eggertsson 1990, Traxler and Unger 1994). Property rights can be defined by the formal laws and regulations or social norms, customs and ideology which comprise the system's *oikos*. Uncertain property rights negatively affect the behaviour of producing entities and waste resources by increasing

transaction costs to the firm and economy effectively reducing its competitiveness. Sustainable development and predation requires well-defined property rights and limits to predation.

Entitlements provide the means to modify the relationship of the firm to the rural system and this system to other economic systems. Recall that prey systems are dependent on predators for survival. This dependence is often confused with competition. The rural firm that simply produces a commodity for sale is in a prey situation. However, this same firm can become more predatory, accessing relatively more of the economic rent by changing its entitlements. Regulation, tariff and non-tariff barriers are methods of rent improving predation. A firm that gains exclusive rights to sourcing, production or marketing reduces competition and enhances its predation and return to its resources. A monopolist who has the ability to control supply and price can be considered to be the ultimate economic predator.

Competitive advantage differs from comparative advantage on the issue of entitlements. Competitive advantage is tied to the entitlements of the firm and its economic system. Low cost factor endowments in one system, a primary feature of comparative advantage, can be circumscribed by entitlements in another system to prevent sale of the commodity produced in the first system.

Entitlements to pollute, to wage subsidies or training, to transportation cost subsidies, to free technical services, to tariffication or taxation of competing product, and many others are all examples of politically conferred entitlements which provide a competitive advantage to one system relative to another. Predatory behaviour, as a prominent feature of competitive advantage, gains or counters entitlements to obtain and retain rent from another system. Transactions costs determine the feasibility and strategic requirements for successful rent extraction, and so feature prominently among entitlements.

2.4.2 Transactions Costs

Transactions costs result from the act of conducting business. Eggertsson (1990) defines

them as the costs associated with the transfer function between supplier and seller. They encompass costs of a wide range of services, taxes, tariffs and insurance. Transportation costs are usually the most evident constraint on developing tradables in a rural economy. However, they only represent the cost of physically moving the inputs to the rural area or product to the urban or export market. Information and legal services, brokerage and agency fees, standards, health and safety regulations, enforcement of compliance, tariffs, excise taxes, non-tariff barriers, and interest charges all represent tangible transactions costs for business. Nontangible transactions costs include product shrinkage, uncertainty and the potential or real costs of exiting a market.

Transactions costs affect the feasibility of tradables development at the same time as they affect the organization of institutions involved in tradables. Vertical and horizontal integration as well as agglomerization of firms and their systems are direct results of transaction cost minimization strategies (Williamson 1981). In effect, these strategies reduce transactions costs by accumulating entitlements and property rights within the organization or system.

The effect of transactions costs is to alter the competitive advantage of one economic system relative to another. They effectively raise the cost of the good or service at the point of final consumption, making it less tradable. Rents are extracted from the rural system by transactions costs, changing the terms of trade against the rural system. These costs influence the process of specialisation based on comparative advantage, especially when transactions costs are differentiated according to commodity. An example of this process is the imposition by the United States of a tariff on British Columbia lumber moving into the United States. This entitlement to U.S. lumber firms effectively raises the cost of lumber at the market destination offsetting any comparative advantage in Canada relative to natural resource based opportunity costs. Competitive advantage of Canadian lumber at U.S. destinations, which could be attributed to low stumpage and taxation rates in private sector strategic alliances with the B.C. and Canadian government, are offset by this tariff.

Developing new tradables in rural areas can be inhibited by transactions costs. These costs decrease the scope for expanding the size of markets by means of economies of size. For example, captive shipper rates may be prohibitively high to move the quantity of product that would allow a firm to retain any rents from developing economies of size. Tariffs and taxes also can eliminate effectively any cost advantages, such as wages, to rural enterprises. Intangible transactions costs attributable to uncertainty from incomplete market knowledge can limit new product development or enterprise expansion.

Transactions costs contribute to the closure of an economic system as they inhibit trading capacity. These costs impede transactions and generate inflexibility in the action/feedback responses (Apedaile 1991) as denoted by the arrows of Figure 2.1. This inflexibility results from constrained learning dynamics of the system and its adaptation to changing markets. The result is a loss of vitality as the rural system loses its capability to respond to economic signals.

2.5 Summary

Tradables development in rural economies is a process of managing change. The rural system is evolving from an agricultural or resource extractive economic base to one built upon higher value products and services. At the same time, the success of this process is in part dependent on uncontrollable economic forces from outside the rural economy. Predatory economic forces extract rent from rural systems. A drain of economic rent reduces the wealth of the rural economy, creating dependencies on income transfers for subsistence. Failure to adapt to change results in an aging rural population, few opportunities for youth, population migration in search of employment and a declining tax base.

Tradable goods and services offer opportunities for new wealth creation to replace declines in basic commodity production. Tradables create wealth by virtue of their value to consumers outside the rural system. This wealth is an accumulation of rent to the rural economy's resources, including not only the traditional resources of land and labour but,

increasingly, the intellectual and talent properties of the human population. Wealth also accumulates according to the productive use of these resources. Labour productivity is a useful measure of the productivity of the human component of rural systems for it is this factor which is the reason for maintaining rural places.

Trade is a means to create and expand rural tradable enterprises whose production exceeds the requirements of the local economy. Trade, through input sourcing and marketing linkages, offers opportunities for developing economies of size and flexible production systems whose specialised, rather than diversified, activities are founded on competitive advantages of the rural system.

Competitive advantage is gained through access to entitlements and property rights from governments and other economic systems. Entitlements such as proprietary technology, exclusive marketing rights and tariffication inhibit other enterprises. The result is an ability to extract from the consumer a greater proportion of rent earned by the resources of the rural system. Entitlements increase the predatory abilities of rural enterprises and systems. Transaction costs also alter the competitive advantage of one economic system relative to another. These costs separate entitlements, effectively raising costs to the end consumer. A tradables development strategy seeks to find organisational structures, such as alliances of rural enterprises and economies, which can minimise these costs while creating competitive advantages for the systems.

Chapter 3 Methods and Data

Tradables development in rural areas has the potential to reduce rural dependencies on resource extractive sectors. Trade in goods, services and information is necessary to reach distant sources and markets with the potential for rural rent accumulation. The relationships among rural firms and their systems affect the productivity and flexibility of rural economies necessary to achieve competitive advantage relative to other systems.

This research explores economic relationships of small rural tradable enterprises in several rural economies. An examination of the physical characteristics, trade patterns, employment and obstacles to expansion and economic alliances is the basis of the exploration. The evidence derived from questioning of tradable firms examines relationships which have been hypothesized to reflect the success of economic development. These relationships are examined relative to areas of trade which can reveal economic dependencies and opportunities.

3.1 Problem Statement

The research problem is to examine existing rural tradable goods and service firms and discover economic relationships within the tradables sector and between it and the rest of the world. It is these relationships which highlight direction for tradables development.

The theoretical arguments have been presented in a systems framework. Thus, no single piece of the theory can be examined separately. Instead, systems theory ties each piece together so the whole is a complete picture of the workings of the economy. This research examines several aspects of the theory.

Development theory expresses a line of reasoning which follows wealth creation through productivity and predation enhancement of firm and their systems. The industrialisation process which encourages productivity of tradable firms is examined through the relationships of physical and talent assets to the age of the firm. Tendencies toward artisan production processes yield higher talent to physical assets ratios. The development of

more highly industrialised tradables is suggested by the opposite state. Over time, development theory suggests a move to fewer artisan production processes.

Productivity is also an important feature of development. A partial productivity measurement of output produced per unit of labour employed allows a comparison between the firms in each economy. Labour productivity is used as a measure of competitiveness with other economic systems.

Wealth creation occurs through the retention of rent within the rural economy. There are two types of stakeholders of concern to this research: the firm and its employees. Wealth is derived from income flows generated by these two groups. The ability of these groups to generate income, and hence retain rent, is a result of firm specialisation and flexibility of the workforce.

The second line of reasoning follows trade theory. Trade is the mechanism which allows rural economies to create and expand firms whose production levels are greater than the requirements of the local economy. Thus, it presents opportunities for the development of firms which may be able to achieve economies of scale or flexibility of production. Input and sales linkages are examined through relationships representing asset utilisation, labour productivity and areas of trade. These links examine dependencies on specific sources or markets and opportunities for alliances to alleviate constraints which may impede tradables development.

Entitlements and transactions costs are the final line of reasoning for this research. Rural systems require sources of competitive advantage other than low wages and natural resources. This research conducts a preliminary exploration of the role and awareness of entitlements and transactions costs. Alliances offer opportunities to reduce these costs as they also open new markets or sources of supply.

3.2 Research Design

The research design is a cross-sectional comparative analysis of three agriculturally-

oriented rural areas experiencing liberalising trade. The nature of liberalising trade results in each system being subjected to similar external forces of predation and competition. The example of liberalising trade used in this research is the North American Free Trade Agreement. The three countries involved in this agreement are Canada, the United States and Mexico. The comparative design applies the four theoretical cornerstones of rural development used for this research, systems theory, development theory, trade, and entitlements, to a rural economy in each country.

3.2.1 The North American Free Trade Agreement

In January 1994, Canada, the United States of America and Mexico signed the North American Free Trade Agreement (NAFTA). This extends many of the provisions of the Canada-United States Free Trade Agreement (CUSTA) of 1988. Together, these agreements will reduce many tariff barriers which have historically sheltered Canadian business from international competition.

These agreements are mainly about a reconsideration of the relationships among businesses, governments and other institutions. In the context of this report and rural economic development, they constrain the scope for government/business alliances for affecting competitive advantage in each others' government jurisdictions. At the same time, the simple fact of rearranging these relationships also generates new scope for these alliances.

Canada has good reason to become involved in these types of agreements. The United States and Canada are the two largest trading partners in the world. According to Chambers and Raworth (1993), Canada's Gross Domestic Product was $C 684 billion. in 1991.Of this, exports to the U. S. amounted to C$ 103 billion in 1991. At the same time, imports to Canada from the U.S. were C$ 86 billion. As an export market, the U.S. represents 15% of Canada's total GDP.

The size of the Canadian market, 27.0 million people is dwarfed by the 253 million people in the United States. From the Canadian perspective, these two agreements ensure access

for Canadian business to this market.

By comparison, Canada-Mexico trade is small. Exports from Canada to Mexico were $C 441 million in 1991. Imports from Mexico were $C 2.6 billion (Chambers and Raworth 1993). However, the rapidly growing economy in Mexico, projected to average 5.5% growth in output over the 1993-95 period, with a population of 81 million is a promising market for Canadian goods and services.

3.2.2 Study Areas

Three rural areas were selected for comparison, one in each of the NAFTA countries. One rural economy was selected from each country, in Alberta, Canada, Nebraska, USA and Sonora, Mexico. The Alberta region was the initial region selected. The other two areas were selected to be similar in terms of type of agriculture and population. Agriculture in the Alberta study area is predominantly beef cattle and wheat and the area is sparsely settled. Nebraska and Sonora have similar agricultural bases although at different stage of development. Descriptive overviews of each study area are presented in subsections 3.2.3, 3.2.4 and 3.2.5.

3.2.3 Study Site Selection Criteria

This study is an examination of subprovincial/substate areas of similar economic composition. Three criteria constitute the basis of comparison among the three rural systems used in this study: each of the rural areas is or has been economically dependent on resource-extractive industry; they are hinterland economies; and there are active rural development efforts in each area. The areas of study are the administrative area of the East Parkland Community Futures Association in east central Alberta, a four county area in east central Nebraska in the United States and the Rio Sonora valley region in northeast Sonora in Mexico. Land area, population, population density and distance to major urban centre comparisons are presented in Table 3.1.

Table 3.1. Comparative Characteristics of Studied Rural Areas: Land Area, Population, Population Density and Distance to Nearest Major Urban Centres.

	Area	Population	Population Density	Minimum Distance (from major metro area)
Rural Economy	sq. km	persons	person/sq. km	km
Alberta: EPCFA	3,900 [1]	12,612 [2]	2.5 [5]	25 (Red Deer) 120 (Calgary) 120 (Edmonton)
Nebraska: Four County Area	5,475	53,235 [3]	9.7	110 (Omaha) 40 (Lincoln)
Sonora: Rio Sonora Valley	6,528	48,730 [4]	7.5	80 (Hermosillo)

1. Approximate.

2. 1990. Source: Statistics Canada, Census of Population 1991.

3. 1991. Source: State and Metropolitan Area Data Book 1991.

4. 1991. Source: CIDESON, 1994.

5. County of and town of Stettler, AB.

The principal criterion is a present or former dependency on resource extractive industries, primarily agriculture. The theoretical arguments are based on the notion of tradables as a means to reduce this historical dependency. This dependency is represented by a majority of the population deriving employment and income from either primary agriculture or its supporting services such as feed, fertilizer and equipment. Non-traditional tradables offer opportunities to shift the system away from the fortunes of single sectors.

The second criterion is that the rural economy must also be a hinterland economy, distant by 100 to 150 km from a major urban area. Hinterland areas are removed from the influences of large urban populations. The objective of this requirement is to reduce the direct influence of economic activity of an urban centre on the development of tradable activities. The focus of the research is on tradable goods and services with the capacity to serve a wide market area rather than a single, and perhaps dominant, urban market. This criterion would also allow possible use of data from agencies such as Statistics Canada which uses population counts and densities to delineate rural from urban. Density of population is another important feature and low density is characteristic of hinterland

economies.

The last criterion is the presence of active rural development efforts. Areas were selected to avoid economies experiencing overall economic decline or stagnation. Active efforts at rural development were judged to be indicative of systems attempting to create opportunities for the population and resisting closure of the system. It was anticipated that development agencies could provide valuable assistance for information and data collection to facilitate research.

3.2.4 Alberta: East Parkland Community Futures Association

The East Parkland Community Futures Association (EPCFA) is a member of the Community Futures program conducted by the Canadian government's Human Resources Development Department. The Association is a locally controlled organization whose task is to provide economic assistance to rural communities, businesses and individuals. This study examines the Association's original region prior to a 1994 expansion.

This region is east of the primary transportation corridor between Edmonton and Calgary, with the closest major urban centre being Red Deer, approximate population of 50,000, on the western border. On the northern boundary is the town of Camrose with hinterland rural areas on the east and southern boundaries. The area encompasses eleven small communities and the town of Stettler, which is the main service centre for much of the area. Stettler is about 75 km from Red Deer and 200-250 km from either Calgary or Edmonton.

The development pattern of this area has historically been based on cereal and cattle agricultural production. Losses in employment opportunities in agriculture in the past twenty years were replaced by expansion in the petroleum industry. The decades of the 1970's and early 1980's witnessed major rehabilitation of rural infrastructure as revenue generated by royalties from petroleum was reintroduced into selected rural communities. Many of these infrastructure projects, such as community centres and small hospitals in minor centres, introduced a bias toward greater dependency on government grants and

subsidies and did little to enhance the ability of the rural economy to evolve beyond resource extraction industries.

3.2.5 Nebraska: Four County Area of Butler, Colfax, Platte and Polk Counties

The area of study in the United States is a four county region in east central Nebraska. This area, centred on the town of Columbus in Platte County, has many similarities with the Alberta site. Small towns are located throughout the area to service agriculture. Columbus functions as the service centre for the area, as does Stettler in the East Parkland region.

Columbus, as the centre of the study area, is 135 kilometres west of Omaha and 115 kilometres north of Lincoln, the two major urban centres in Nebraska. The study area is bounded on all sides by communities of size similar to Columbus, population approximately 20,000: clockwise from Norfolk on the north, Fremont, Seward and Grand Island. This area is comprised of twenty eight small communities in addition to Columbus.

Although there are over forty thousand more inhabitants in these Nebraska counties than in the East Parkland area, the population density is only 3.9 times greater than that of East Parkland (Table 3.1). Both areas are similarly sparsely populated.

The economic development situation in this area of Nebraska has been historically driven by agriculture. Corn, both rainfed and irrigated, and cattle feeding are the main farm enterprises. Services and manufacturing developed to serve the agricultural backbone of the area. The farm crisis of the early 1980's highlighted the dependency on agriculture and motivated a vigorous industrial recruitment program by the local governments, area Chambers of Commerce and local electric power utilities to attract non-agricultural industry to the area. Presently, approximately 6000 jobs in Columbus are directly tied to these firms.

3.2.6 Sonora: Rio Sonora Valley

The Rio Sonora valley in the northeast region of the State of Sonora is the area of study in

Mexico. The area is a river valley running north to south bisecting two mountain ranges to the east and west of the valley. A two lane highway travels the length of the valley, beginning in the south at Hermosillo, the state capital and primary urban centre, and ending at Cananea in the north. The study uses the town of Ures, approximately eighty kilometres from Hermosillo, as the southern end and Cananea, approximately 350 km from Hermosillo, as the northern terminus of the valley.

The area has a population similar to the Nebraska study region. However, one half is concentrated in the town of Cananea, population of 24,967[2]. The majority of the remaining population are located in seven small communities found throughout the length of the valley. The population density of the Sonoran region is three times greater than the Alberta region and slightly less that in Nebraska (Table 3.1).

The economic base of the valley has historically been cattle ranching and a small amount of horticultural production. Agricultural services, commerce and microenterprises are primarily located in the established towns and villages rather than the hinterland rural areas. In the past several years, economic development for the area has relied upon *Solidaridad*, a national rural development program. This program promotes agriculture sector growth to reduce unemployment, increase living standards and reduce migration to urban areas. The state government has initiated an investigation of small manufacturing businesses to gauge their ability to produce similar results.

3.3 Observation Procedure

Many of the questions posed by the theory require highly disaggregated data from a wide range of tradable goods and services of small rural economic systems. However, secondary data is unavailable at the firm or small area level[3]. The comparative

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[2]Source: CIDESON, 1994.

[3]This research attempted to develop an index of tradable activity for the Alberta region. Statistics Canada data sources were to be used. At this time, there are no small area data series to allow an index of this type to be constructed at the subprovincial level for 3 or 4-digit SIC codes.

Table 3.2. Counts of Eligible and Interviewed Tradables Firms in Each Selected Rural Economy

	Firm Counts		Percentage Interviewed
Rural Economy	Eligible	Interviewed	
Alberta: EPCFA	43	22	51.2%
Nebraska: Four County Area	45	21	46.7%
Sonora: Rio Sonora Valley	16	13	81.3%

questionnaire design overcomes this difficulty through personal interviews of both tradables firms and their employees. The design also allowed surveying across national boundaries to compare economic relationships in tradable economic systems.

Potentially tradable goods and services encompass many of the two digit major groupings of Standard Industrial Classifications (SIC) (Appendix 1). Observations were to be gathered from firms from all applicable economic sectors. Questionnaires were designed to be applicable to all types of enterprises except those involved in resource extractive industries and their direct services, retail, commerce, and transport.

Two steps were used to determine eligible firms. In each economy, secondary sources such as economic development agencies were used to compile a list of firms. From this list, selected firms were telephoned or visited to check eligibility and willingness to participate prior to proceeding with the interview. Several criteria were used to determine suitable firms.

The first criterion was that the firm must be active in trading outside the local economy, or have potential to become tradable. Secondly, the firm's tradable activity could include anything but primary agriculture, agricultural services such as feed, seed and fertiliser dealers, resource extraction such as petroleum producers, retail, commerce and transport. Thirdly, the size of firms was restricted to less than fifty employees, a size thought to be attainable in a rural economy yet not highly restrictive on the sample size. In Sonora, a *maquiladora* was examined even though it violated this criterion. *Maquiladoras* have a role for employment creation in small rural communities in Mexico and the presence of this one firm was an opportunity to examine its effects on the community's wealth.

The original intention of the sample design was to interview only firms found outside the economic centres of each rural economy. The initial round of interviews was restricted to firms in the hinterlands of the rural areas. However, the number of eligible firms in Alberta and Nebraska was considered too small for the observed variation in the measured attributes. A second round of interviews was conducted in the more urban economic centres of Stettler and Columbus. Only one round of interviews was conducted in the Sonoran hinterland communities in the valley because firms were more homogeneous.

The intended outcome of the interview process was a sample of tradable goods and services firms from each area. The final outcome resulted in an enumeration of all eligible firms in the hinterlands of the rural economies and a sampling of tradable firms in the economic centres. The term "sample" is used in this report to refer to the data sets derived from these interviews. The counts of eligible firms and successful interviews for each rural economy are presented in Table 3.2.

3.4 Questionnaires

A two part survey instrument is used to obtain research data. One questionnaire gathers information about the activities of tradable firms and the other obtains data on the employees of these firms. Both quantitative and qualitative answers are sought. Appendices 2 and 3 are copies of the questionnaires used in Sonora.

3.4.1 Firm Questionnaire

The firm questionnaire (Appendix 2) is divided into five categories: general biographical; workforce; backward linkages; forward linkages; and expansion plans, property rights and entitlements. General biographical questions are asked on age and size of the firm, financial solvency and ownership structure. The workforce section seeks data on workforce size, pluriactivity, skill and talent requirements and workforce training. Backward linkages examine the supply side of the firm's production transformation process. Quantities of input sourcing by trade zone, qualitative questions on supplier relationships and the effects of transaction costs on these relationships are examined. The

section on forward linkages explores the sales and marketing process. Quantities marketed by trade zone, qualitative questions on buyer relationships and the effects of transaction costs on these marketing relationships are observed. The final section examines expansion plans and ranks obstacles to expansion. Qualitative questions on entitlements are used to assess the awareness of alliance possibilities and the role of entitlements in this process.

The same questionnaire was used in each study area. Adjustments were made to trade area questions to reflect national trade patterns, i.e. interprovincial versus interstate trade, international trade to the United States and Mexico for Albertan firms and to the United States and Canada for Sonora firms.

The questionnaire was tested on two firms in the town of Stettler, Alberta. This community was used because the original intention was to exclude tradable firms in the more urban centres. While firms were eventually interviewed in these centres, these two test interviews were not included in the research data. Changes were made to the questionnaire following the initial round of interviews in the hinterland areas of the EPCFA. A question was added to determine if the firm in question is affiliated with any other firm. This is the second part of question 7 (Appendix 2). Question 20 on firm expansion plans was added to determine a reason if expansion was anticipated. In question 21, the financing and risk and uncertainty obstacles were combined and respecified as either an inability or an unwillingness to obtain financing. The final question was expanded to include specific reference to alliances to gain access to government entitlements (question 23).

For the Sonoran interviews, questionnaires were translated into Spanish. A Sonoran professional interpreter conducted the interviews under the supervision of the researcher. Question 3, firm total sales volume, was adjusted to account for the anticipated small size of Sonoran tradable firms. This was done in consultation with personnel from the Centro de Investigatión y Desarrollo de los Recursos Naturales de Sonora (CIDESON) in Hermosillo, Sonora. Rather than initial increments of $100,000, the ranges of sales volume were adjusted downward to begin at $25,000 annually (60,000 new pesos (N$)), increase

$50,000, and then in increments of $50,000. At annual sales of $500,000, this incremental adjustment was increased to $100,000 (N$240,000). Similar adjustments were made to question 4 on assets values.

To allow comparability among data derived from firms in three countries using different currencies, all monetary values are converted to Canadian dollars. The data collected also represents information for each firm's fiscal year 1992.

3.4.2 Employee Questionnaire

The employee questionnaire (Appendix 3) sought data on characteristics of the workforce. Measures of education and skill capacity, economic dependency and flexibility were observed. Biographical data included gender, age, place of residence, education, employment and household income and job benefits. The same questionnaire was given to a sample of tradables firm employees in all areas of study. The questionnaire was translated into Spanish for the Sonoran interviews.

3.4.3 Interview Strategy

The firm questionnaire was used in on-site personal interviews with the owner or manager of each selected tradable firm. In both Alberta and Nebraska, interviews were scheduled through telephone calls at convenient times for the owner/manager. In Sonora, often there is just a single telephone in the community which prevented this approach. Instead, guided by the advice of the interpreter and CIDESON staff, the researcher and interpreter simply travelled to each community to ask for interviews in person. The generosity of the Mexican owners and employees was appreciated in this contact strategy. In all areas, each interview was scheduled for a minimum of one hour although nearly all required 1.5-2.5 hours.

A sample of employees from each firm was given the second questionnaire. A sample of twenty percent of the firm workforce was collected, with a minimum sample of two employees per firm. In all cases, the owner or manager was included in the sample. Each

interview was conducted in private with confidentiality of the personal data assured. These interviews required no more than five minutes to conduct.

3.5 Data Analysis Procedures

The analysis involves a description of the economic relationships through various classifications and patterns, tests of associations and differences. Area to area comparisons are emphasised. Statistical and econometric analysis is conducted with the SHAZAM (Version 7.0) computer package (White 1993).

Monetary values are transformed into Canadian dollars. The exchange rates are CDN$1=US$0.7387 and CDN$1=N$2.3. These were the rates in effect at the time of the interviews. The interviews were conducted in December 1993, January and April 1994 in Alberta, in January, February and April 1994 in Nebraska, and August and September 1994 in Sonora.

Firms are aggregated into groups depending on gross sales volume. The modest number of observations in the three rural economies prevents classification based on distinctive tradable behaviour because of its high variability. Analyses of these groups are conducted on various aspects of firm behaviour and economic relationships. These include industry specialisation, physical and talent assets, productivity, employment levels, education and income levels of the firm employees, and sourcing and sales by area of trade. Obstacles to expansion are also analyzed through counts and ranking. Both group to group and area to area comparisons are made.

Correlation analysis is used to determine pairwise associations between selected variables. The measure used is the Spearman rank-order coefficient (ρ) which measures the degree of relationship between two sets of ranked observations (Mason 1986). It is a non-parametric test which makes no assumption of population distribution or sample independence. Significance of ρ is tested using Student's t to determine whether the correlation is due to chance and the correlation of the population is really zero.

Chapter 4 Results - Descriptive Comparisons of Rural Tradables Systems

This chapter presents descriptive characteristics of rural tradable firms and their economic systems. This section examines the divergent trading, physical and workforce relationships of the selected Alberta, Nebraska and Sonora rural economies based on their firms' individual characteristics and trading patterns. The results uncover diversity among the three systems, suggesting opportunities for economic alliances and other business relationships.

4.1 Classification of Tradable Firms: Specialization

Specialisation in production benefits an economy as the resources are used to their greatest productivity (Evans 1989, Piore and Sabel 1984, Porter 1990). However, specialisation can rarely run its full course to completion as the economy adjusts to changing economic signals. Flexibility of production in rural economies permits adjustments to be made without incurring hardships of unemployment or population dislocation. Table 4.1 reports the classification of tradable firms according to the two digit major group Standard Industrial Classification used by Statistics Canada.

There is little indication of a coherent specialisation in the Alberta and Nebraska economies. A wide range of tradable activities take place simultaneously. In the Alberta sample, food processing firms are the largest single category yet this group represents only four firms of a total of twenty-one. Primary metal, fabricated metal and chemical and chemical product firms are the second most numerous firms with 10 % of firms in each industry.

In the Nebraska sample, food and fabricated metal firms are found in equal numbers with each having 25% of the total number of firms. The second largest industry in terms of number of firms is the wood industry at 20% of all firms.

The Sonora rural economy appears to specialise in the furniture and fixture industry. Forty-two percent of firms are found in this industry. The second largest percentage, 17%,

Table 4.1. Industry specialisation classifications of tradable firms categorised by number and percentage of firms in each relevant Standard Industrial Classification, Alberta, Nebraska, Sonora, 1994.

		Alberta		Nebraska		Sonora	
Major Group	SIC Code	Number	%	Number	%	Number	%
Service Industries Incidental to Agriculture	02	1	5	-	-	-	-
Food Industries	10	4	19	5	25	1	8
Leather and Allied Products Industries	17	-	-	-	-	2	17
Clothing Industries	24	-	-	-	-	1	8
Wood Industries	25	1	5	4	20	-	-
Furniture and Fixture Industries	26	1	5	-	-	5	42
Printing, Publishing and Allied Industries	28	-	-	1	5	-	-
Primary Metal Industries	29	2	10	-	-	-	-
Fabricated Metal Products Industries	30	2	10	5	25	2	17
Machinery Industries	31	1	5	1	5	-	-
Transportation Equipment Industries	32	-	-	1	5	-	-
Non-Metallic Mineral Products Industries	35	-	-	-	-	1	8
Electrical and Electronic Products Industries	33	1	5	2	10	-	-
Chemical and Chemical Products Industries	37	2	10	-	-	-	-
Other Manufacturing Industries	39	1	5	1	5	-	-
Metals, Hardware, Plumbing Heating and Building Materials Industries, Wholesale	56	1	5	-	-	-	-
Machinery, Equipment and Supplies Industries, Wholesale	57	1	5	-	-	-	-
Accommodation Service Industries	91	1	5	-	-	-	-
Amusement and Recreationa Service Industries	96	2	10	-	-	-	-
Total		21	100	20	100	12	100

Table 4.2. Mean and standard deviation of gross sales of tradable firms classified as all firms, Group 1 and Group 2 firms, Alberta, Nebraska, Sonora, 1994.

	Gross Sales (thousands of dollars)					
	All Firms		Group 1		Group 2	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Alberta	569	537	195	129	980	514
Nebraska	1,979	2,335	128	98	3,367	2,236
Sonora	116	152	116	152	-	-

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

of firms is in the leather and allied products industry.

4.2 Classification of Tradable Firms: Sales Volume

Firms are classified in two categories. The first contains firms having less than $500,000 in gross sales annually, hereafter called Group 1. The second group of firms have sales greater than $500,000 per year and is hereafter called Group 2. The mean values of all firms are presented in Table 4.2.

The wide range of firm size, from sales of less than $100,000 per year to slightly less than $5,000,000, results in large standard deviations for all firms (Table 4.2). While this variability was expected, the number of observations precluded disaggregation into more than groupings based on sales volume. As shown in Table 4.3, each group has twelve or fewer firms. The classification represents a compromise between precision and information on distinctive behaviour.

Complete statistics for sales volume for all firms are given in Appendix 4.

4.2.1 Size of Firms: Sales Volume

The largest firms, measured by sales volume, in the samples have much greater sales volume than the smaller firms. The Group 2 firms are slightly fewer in number in the Alberta sample and slightly greater in number in the Nebraska sample than the numbers of Group 1 firms. They represent the bulk of tradable sales volume in each local rural economy, 82.0% and 96.7% of total firm sales, respectively.

Table 4.3. Gross sales for tradable firms categorized by groupings of less than $500,000 (Group 1) and greater than $500,000 (Group 2) in annual sales, Alberta, Nebraska and Sonora, 1994.

	Gross Sales (thousands of dollars)		
	Group 1	Group 2	Total
Alberta			
Number of Firms	11	10	21
Total Sales/group	2,150	9,800	11,950
Group % of Sales	18.0	82.0	100.0
Nebraska			
Number of Firms	9	11	20
Total Sales/group	1,150	33,638	34,788
Group % of Sales	3.3	96.7	100.0
Sonora			
Number of Firms	12	1	13
Total Sales/group	1,396	-	1,396
Group % of Sales	100.0	-	100.0

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

Table 4.3 presents the sales volumes for all firms used in this research. Ten of twenty-one firms in Alberta have less than $500,000 sales. The mean for Group 1 is $195,000 while the mean sales for Group 2 is $980,000. The mean for all firms in Alberta is $569,000.

In Nebraska, 9 of 20 are in Group 1 and the group mean is $128,000. Group 2 mean is $3,367,000. The mean for all firms is $1,979,000. This mean value of sales volume of all Nebraska firms is the highest of the three economies at more than twice the means of the Alberta and the Sonora firms (Table 4.2).

In Sonora, all but one firm are in Group 1. The mean of Group 1 is $116,000. However, 7 of these 12 firms had less than $50,000 annual gross sales and 8 less than $100,000. The values for the single for in Group 2 cannot be presented for reasons of confidentiality. Clearly, most tradable firms in rural Sonora tend to be much smaller than the Alberta and Nebraska firms.

Table 4.4. Mean age and ownership structure of tradable firms classified by sales group, Alberta, Nebraska and Sonora, 1994.

	Alberta		Nebraska		Sonora	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Mean Age (years)	9.6	10.4	21.4	25.8	13.8	-
Ownership[1]						
Sole Proprietorship	5 (45.5)	1 (10)	6 (66.7)	0 (0)	7 (58.3)	-
Partnership	1 (9.1)	2 (20)	0 (0)	0 (0)	4 (33.3)	-
Co-operative	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Limited Company	5 (45.5)	7 (70)	3 (33.3)	11 (100)	1 (8.3)	-
Other	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	-
Total	11 (100)	10 (100)	9 (100)	11 (100)	12 (100)	-

1. Values for ownership are the number of firms of specific type. Percentages of each type of the group are presented in parentheses.

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

4.3 Age of Firm and Ownership Structure

The age and ownership structures of all firms are presented in Table 4.4. The Alberta firms have the lowest average time in business in both groups in all the economies. Relatively little difference between the mean age of Group 1 and 2 firms is noted.

The mean age of Nebraska firms in Group 1 is 2.2 times that of the Alberta firms, 21.4 years versus 9.6 years, and 7.4 years greater than the Sonora firms. The mean age of the Nebraska firms in Group 2 is 2.4 times that of the same group in Alberta at 25.8 years as compared to 10.4 years.

Ownership in Alberta Group 1 tradable firms is equally divided between sole proprietorship (45.5%) and limited companies (45.5%) with one partnership. Two-thirds of Nebraska firms are sole proprietorship and the remaining are limited companies. In Sonora, ownership is predominantly sole proprietorships (58.3%) with the remaining partnerships (33.3%) and one limited company.

Limited company, or incorporated company in the United States, is the preferred form of ownership among Group 2 firms. In Nebraska, all Group 2 firms use limited companies as

Table 4.5. Physical assets, talent assets and physical asset-talent asset ratios of tradable firms classified by sales groups, Alberta, Nebraska, Sonora, 1994.

	(thousands of dollars)		
	Group 1	Group 2	Total
Alberta			
Physical Assets	1,850	5,300	7,150
Group % of Total	25.9	74.1	100.0
Physical Assets/Firm (Mean)	168	530	650
Talent Assets	1,350	4,600	5,950
Group % of Total Talent Assets	22.7	77.3	100.0
Talent Assets/Firm (Mean)	123	460	541
Physical Asset/Talent Asset Ratio	1.4	1.2	1.2
Nebraska			
Physical Assets	1,557	11,438	12,995
Group % of Total	12.0	88.0	100.0
Physical Assets/Firm (Mean)	173	1,040	650
Talent Assets	1,151	13,604	14,755
Group % of Total Talent Assets	7.8	92.2	100.0
Talent Assets/Firm (Mean)	128	1,237	738
Physical Asset/Talent Asset Ratio	1.4	0.8	0.9
Sonora			
Physical Assets	2,204	-	2,204
Group % of Total	100.0	-	100.0
Physical Assets/Firm (Mean)	184	-	184
Talent Assets	626	-	626
Group % of Total Talent Assets	100.0	-	100.0
Talent Assets/Firm (Mean)	52	-	52
Physical Asset/Talent Asset Ratio	3.5	-	3.5

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

their ownership structure. In Alberta, 70% of these Group 2 firms are limited companies with 20% as partnerships and 10% as sole proprietorships.

4.4 Size of Firms: Asset Valuation

The size of the firm can also be measured by the value of its assets. Two kinds of assets are considered in this study. The first, physical assets, is the conventional measure of the

stock of physical goods such as machinery and land representing the fixed investment in the productive capacity of the enterprise. A second measure was attempted for this research to represent the value of the talent, knowledge and accumulated experience of the permanent workforce, sometimes called human capital or talent assets. These assets were valued by the firm owners or managers as the value to the business of the experience and talents of the management and the employees. A summary of these asset values is presented in Table 4.5.

Physical assets of Group 2 firms in both Alberta and Nebraska claim the largest proportion of total physical asset valuation, 74.1% and 88.0% respectively. The mean values for Group 1 firms in Alberta and Nebraska are slightly less than the Sonora group. The mean for Group 2 firms in Nebraska is almost twice the value for the Alberta firms.

A greater proportion of the value of talent assets is similarly claimed by the Group 2 firms in Alberta with 77.3%. Group 1 valued their talent assets as the remaining 22.7% of total talent assets of all Alberta firms. This occurs even though these firms represent only 18.0% of this area's total sales.

In contrast, Group 1 firms in Nebraska claimed 7.8% of the value of the state's sample total talent assets. In turn, these firms represent 3.3% of total state sales.

The mean value for talent assets in Group 1 in Alberta is equal to that in Nebraska and both are more than double the mean value in Sonora. The mean for Group 2 talent assets for Nebraska firms is nearly three times the level for Alberta firms.

4.5 Sales Volume and Employment

Employment in tradables enterprises is a another means for examining relationships among systems. The income earned by employees encompasses the wages of the employee and a rent component which is attributable to the education, skills and talent of the workforce. Rent accumulation through these attributes is critical to the welfare of rural communities. The following results illustrate the employment situation in the sampled tradables sector of

Table 4.6. Numbers of employed persons and person-months of work classified by sales group of tradable firms, Alberta, Nebraska and Sonora, 1994.

	Group 1	Group2	Total
Alberta			
No. of employees	67	137	204
Group % of total	33	67	100
Person-months of work	538	1,311	1,850
Group % of total	29	71	100
Person-months/employee	8	10	9
Person-months/firm	45	146	88
Nebraska			
No. of employees	50	185	235
Group % of total	21	79	100
Person-months of work	363	1,950	2,313
Group % of total	16	84	100
Person-months/employee	7	11	10
Person-months/firm	40	177	116
Sonora			
No. of employees	237	-	237
Group % of total	100	-	100
Person-months of work	2,753	-	2,753
Group % of total	100	-	100
Person-months/employee	12	-	12
Person-months/firm	229	-	229

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

each economy.

Table 4.6 presents the number of employees per sales group, the number of person-months worked per group and person-months per firm. A person-month of work is four 40 hour weeks of work for one person. Full time employment is defined as 12 person-months per

Table 4.7. Asset valuations per person-month for tradable firms, Alberta, Nebraska and Sonora, 1994.

	dollars		
	Group 1	Group 2	Total
Alberta			
Physical Assets per person-month	3,902	3,851	3,866
Talent Assets per person-month	4,831	2,554	3,217
Nebraska			
Physical Assets per person-month	4,294	5,866	5,619
Talent Assets per person-month	3,174	6,976	6,380
Sonora			
Physical Assets per person-month	801	-	801
Talent Assets per person-month	227	-	227

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

employee. The measures reported in Table 4.6 are totals of full-time, part-time, temporary and seasonal employment.

The Alberta and Nebraska samples are similar in the number of employees employed and person-months worked. Group 2 firms in both of Alberta and Nebraska employ the majority of workers, 70.9 % and 84.3% of the total of each area respectively. At least three quarters of employment is full-time in both of these groups.

Sonoran Group 1 firms employ up to four times as many people as the same groups in Alberta and Nebraska. Person-months per employee is twelve for Group 1 firms indicating universal full-time employment in these tradable operations. This contrasts with more part-time, temporary or seasonal employment in the other two systems. Alberta Group 1 firms average eight person-months per employee while the same group in Nebraska averages seven person-months per employee.

Sales and assets are normalised on a person-month basis to improve comparisons among firms. Economic relationships are then characterized on a per unit employed basis rather than as absolute values of sales or assets. Comparisons on a per employee basis would be meaningless due to potential differences in hours worked. Measures per person-month are

used in the remainder of this report to classify tradable activities and structure.

Asset valuations per person-month are presented in Table 4.7. The results indicate that values are similar between Alberta and Nebraska firms. In contrast, Sonora has small valuations on a person-month basis relative to the other two economies. Group 1 firms in Sonora have physical assets valued at $800 for each person-month employed versus $3,900 in Alberta and $4,300 for Nebraska. This low value for physical assets is an indication of the highly labour intensive artisan activities being performed in the rural Sonoran firms. Both Alberta and Nebraska firms are relatively more capitalized than Sonoran firms. It is also noted that the Sonoran firms require relatively unskilled labour for their activities. Talent assets were valued at only $200 per person month. By comparison, talent was valued by Alberta firms at $4800 per person-month and Nebraskan firms at $3200 per person-month employed.

4.6 Productivity

4.6.1 Sales Per Person-Month Employed

A partial factor productivity measure of labour productivity is used to evaluate output per hour worked. Sales volume is a proxy for output. The ratio overstates the productivity of the firm. The ratio measures not only the value-added by the firm's production but also captures potential gains in valued-added attributable to industrialised inputs. Thus, it measures both the firm's own contribution to output and the value of all processes which have preceded the firm's own production. However, given the concerns of this research, it does provide an average partial productivity measure which is easily calculated and compared across the three economic systems in question. The results are reported in Table 4.8.

The productivity of Group 1 firms in Alberta is greater than for the same group in Nebraska. Each person-month worked produces $50,17 in sales in Alberta and $3,173 in Nebraska. In Sonora, only $507 in sales is created by each person-month employed.

Table 4.8. Firm productivity measured as sales per employee and sales per person-month, Alberta, Nebraska, Sonora, 1994.

	dollars		
	Group 1	Group 2	Total
Alberta			
Sales per employee	40,525	67,518	58,686
Sales per person-month	5,017	7,053	6,461
Nebraska			
Sales per employee	23,012	181,827	148,037
Sales per Person-month	3,173	17,250	15,043
Sonora			
Sales per employee	5,903	-	5,903
Sales per Person-month	507	-	507

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

Group 2 firms in Nebraska create 2.4 times the sales volume for each person-month worked as those firms in Alberta: $17,250 versus $7,053. In total, all firms in Nebraska are more productive that those in Alberta which, in turn, are more productive than those in Sonora.

The higher productivity of labour in the Group 2 firms is indicative of economies of scale associated with larger enterprises. This tendency is most pronounced in Nebraska. Group 2 firms are over five times more productive per person-month than Group 1 firms. Scale of production is associated with higher levels of capitalization represented by greater use of physical assets per person-month in Group 2 firms (Table 4.7).

Capital for labour substitution is a central theme in development theory in richer nations. Table 4.9 presents the capital for labour ratio which reflects differences in capital inputs for mechanization and hence potential economies of scale. The ratio is calculated as physical assets in thousands of dollars divided by person-months of labour employed.

The ratio is the same for the two firm groups in Alberta. In contrast, the ratio increases to

Table 4.9. Capital-labour ratios of tradable firms classified by sales volume grouping, Alberta, Nebraska, Sonora, 1994.

	Capital-Labour Ratio[1]		
	Group 1	Group 2	Total
Alberta	3.4	4.0	3.9
Nebraska	4.3	5.9	5.6
Sonora	0.8	-	0.8

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

1. Calculated as physical assets ($'000)/person-months.

5.9 in Group 2 firms in Nebraska from 4.3 for Group 1 firms. This pattern matches to the higher productivity of Group 2 firms in Nebraska relative to the same group in Alberta.

4.6.2 Capital-Output Ratios

Capital-output ratios measure the productive use of the assets employed by the firm. Table 4.10 presents capital-output ratios for all firms for physical assets, talent assets and total combined assets. The lower the ratio value, the more productive the asset is in creating sales.

Group 1 firms in Alberta in all asset types have lower ratios than either Nebraska or Sonora. This indicates that these firms make better use of their asset bases to generate a dollar of sales. In Alberta, it requires $1.44 in physical assets to produce one dollar of sales while Nebraska requires $1.52 in physical assets and Sonora $1.93. The talent asset-output ratio for Alberta firms is slightly lower than that for Nebraska firms but slightly higher than the ratio for Sonoran firms.

Group 2 firms in Alberta are slightly more productive with their physical assets than Nebraska firms (0.53 versus 0.56) but slightly less with their talent assets (0.59 versus 0.48) and assets as a whole (1.12 and 1.04).

The total assets-output ratio illustrates the productivity differential between the more capitalised firms in Alberta and Nebraska as compared to Sonora. All firms in Sonora have a combined ratio of 2.88 while Alberta is 1.88 and Nebraska is 1.76. Sonora firms use at least one dollar more in total assets to generate the sale of a dollar's worth of product than

Table 4.10. Mean values of capital-output ratios of tradable firms measured as dollars of assets per dollars of gross sales categorized by sales volume grouping, Alberta, Nebraska, Sonora, 1994..

	Physical Assets/Gross Sales			Talent Assets/Gross Sales			Total Assets/Gross Sales		
	All Firms	Group 1	Group 2	All Firms	Group 1	Group 2	All Firms	Group 1	Group 2
Alberta	1.01	1.44	0.53	0.87	1.13	0.59	1.88	2.57	1.12
Nebraska	0.99	1.52	0.56	0.78	1.15	0.48	1.76	2.67	1.04
Sonora	1.86	1.93	-	1.02	1.03	-	2.88	2.95	-

either of the other two economies.

These measures of talent productivity do not account for talent quality issues. It is important to realize that the talents of employees are not of equal value and productivity. The definition of talent used in this research, the accumulated skills and learned experience of the employee, means that each person gains his or her talent value differently. This research did not attempt to measure or even define individual components of talent. That attempt is beyond the scope of the project. Rather, the goal was to attempt a measure of the owner/manager's valuation of talent to the tradable firm. It is this valuation of talent which is used in the previous productivity measures: the value of the productivity of the owner/manager's assessment of talent of all employees in the firm.

These measures also do not account for the differences in production processes and technology. Similar capital-output ratios may measure vastly different production systems. The degree of mechanization or computerization in the production process and how this technology is used is not directly reflected in the capital-output ratios.

4.7 Trade

Trade with other firms outside the bounds of the local rural system represents the means to expand the boundaries of the rural economic system. This research examines both the input and the output links between the tradable firms and the rest of the world. Four concentric rings of trade, representing ever greater spheres of trade, are examined. The first is local, which is defined as within 25 kilometres (15 miles) of the firm. The second is

Table 4.11. Input sourcing volumes and percentages per person-month employed classified by trading area and sales grouping for Alberta tradable firms, 1994.

	(thousands of dollars)					
Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	0.2	1.6	3.7	9.0	3.9	7.2
Rest of Alberta	7.1	55.0	17.9	43.3	25.0	46.1
Interprovincial	3.4	26.4	5.5	13.3	8.9	16.4
US	1.8	14.0	7.9	19.1	9.7	17.9
Mexico	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.4	3.1	6.3	15.3	6.7	12.4
Total	12.9	100.0	41.3	100.0	54.2	100.0

trade with the rest of the respective province or state but excluding the local area. The third is interprovincial or interstate trade and the fourth is international trade.

4.7.1 Sourcing Linkages

Sourcing is the acquisition of material inputs used in the production transformation process of the firm. These inputs are the intermediate materials which will be incorporated in the firm's finished product. The results in the following tables are the volume of sourcing of material inputs per person-month of labour. Aggregate data on inputs are presented in Appendix 4.

Table 4.11 presents Alberta firm sourcing by trade zone. The Alberta firms generally source the majority of their inputs from within the province. Local sourcing and sourcing from the remainder of Alberta account for 53%, or $28,900 per person-month, of all firms' sourcing trade. Of this amount, local sourcing is relatively small. The rest of the province accounts for 46.1% of total firm sourcing. The United States is the second largest source for the Albertan firms with 17.9%, followed by interprovincial trade at 16.4% of the total.

Firms in Group 1 in Alberta source very little locally (1.6%). Most (55%) is purchased in the Albertan economy outside the local area. Interprovincial trade accounts for over a quarter of this group's sourcing. Group 2 firms also purchase the majority of their material inputs from within the province. Nine percent is purchased from local suppliers while

Table 4.12. Input sourcing volumes and percentages per person-month employed classified by trading area and sales grouping for Nebraska tradable firms, 1994.

	(thousands of dollars)					
Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	6.0	42.6	17.4	16.2	23.4	19.2
Rest of Nebraska	4.2	29.8	20.9	19.4	25.1	20.6
Interstate	3.9	27.7	65.3	60.6	69.2	56.8
Canada	0.0	0.0	0.7	0.6	0.7	0.6
Mexico	0.0	0.0	0.5	0.5	0.5	0.4
Other	0.0	0.0	2.9	2.7	2.9	2.4
Total	14.1	100.0	107.7	100.0	121.8	100.0

43.3% comes from the rest of Alberta. The US supplies 19.1% of total inputs while the rest of the world contributes 15.3%. Interprovincial trade accounts for the remaining 13.3%.

In contrast with Alberta, interstate trade is the largest component of input supply trade for all Nebraska firms (Table 4.12). Nearly 60% of total supplies are purchased from suppliers within the US but outside the state. Local and rest of Nebraska trade share equal amounts of the remaining sourcing, 19.2% and 20.6%, respectively. International trade accounts for only 3.4% of total Nebraska sourcing. In Nebraska, sourcing behaviour differs according to the size of firm. The small firms of Group 1 rely on sources of supply relatively close to the place of production. Group 2 firms source farther afield.

For Group 1 firms, local trade is the primary area for sourcing with 42.6% of the group total. Rest of Nebraska and interstate trade equally share the remaining trade. No international sourcing is found for these smallest firms. In absolute terms, Alberta and Nebraska firms of this group purchase a comparable amount per person-month: $12,900 and $14,100, respectively.

Group 2 firms use interstate trade as the primary means of supply acquisition. These firms purchase 60.6% of their inputs from outside the state but within the nation. Intrastate trade accounts for 19.4% of inputs while 16.2% is obtained from local suppliers. Very little, 3.8%, is purchased from international sources. In absolute terms, over two and one-

Table 4.13. Input sourcing volumes and percentages per person-month employed classified by trading area and sales grouping for Sonora tradable firms, 1994.

	(thousands of dollars)					
Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	1.0	33.3	-	-	1.0	33.3
Rest of Sonora	0.2	6.7	-	-	0.2	6.7
Interstate	1.3	43.3	-	-	1.3	43.3
Canada	0.0	0.0	-	-	0.0	0.0
United States	0.5	16.7	-	-	0.5	16.7
Other	0.0	0.0	-	-	0.0	0.0
Total	3.0	100.0	-	-	3.0	100.0

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

half as much is purchased by these group 2 firms in Nebraska as by their counterparts in Alberta.

Input sourcing for the sampled Sonoran firms is presented in Table 4.13. The Sonora firms source one third of their inputs from local suppliers. Very little, 6.7%, comes from the rest of the state. Out of state suppliers contribute the greatest proportion of material inputs to these firms. Interstate trade accounts for 43.3% of inputs while the United States supplies the remaining 16.7%. In absolute terms, the value of inputs which these Sonora firms purchase is relatively small, $3000 per person-month, in comparison with the other two economies.

4.7.2 Sales Linkages

Sales linkages are the links between the producer and the buyer of the tradable firm's output. No distinction is made as to the identity of the consumer in this research. The consumer may be a manufacturer using the product as an input in their own production processes, a wholesaler or retailer, or a final consumer.

Table 4.14 reports the sales volume by trade zone for the Alberta firms. The Alberta market is the most important single market for all firms in the Alberta sample. The Alberta market accounts for 64% of all sales at a volume of $265,700 per person-month of

Table 4.14. Sales volumes and percentages per person-month employed classified by trading area and sales grouping for Alberta tradable firms, 1994.

	(thousands of dollars)					
Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	1.1	0.6	6.5	2.5	7.6	1.8
Rest of Alberta	101.7	59.3	164.0	64.1	265.7	62.2
Interprovincial	50.9	29.7	53.9	21.1	104.8	24.5
US	17.2	10.0	26.4	10.3	43.6	10.2
Mexico	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.5	0.3	5.0	2.0	5.5	1.3
Total	171.4	100.0	255.8	100.0	427.2	100.0

employment. The local market is small, representing only 1.8% of the total. The second most important trade area is the interprovincial market with 24.5% of sales. Sales to the US account for 10.2% of the total. Other international sales are only 1.3% of the total. Note that none of the firms sell into the emerging Mexican market.

Disaggregation into groups reveals similar trade patterns for both groups. In both cases, the Alberta market remains the primary sales target. Local sales for Group 1 firms are small relative to the rest of Alberta: 0.6% and 59.3%, respectively. Interprovincial markets are the second largest trade area with the US accounting for 10%. Other international markets are only 0.3% of the total.

Group 2 firms also sell the majority of their product (64.1%) to the rest of Alberta market. Interprovincial sales are about a fifth of the total while sales to the US are 10.3% of all sales. Other international sales account for 2.0% of this group's total.

Table 4.15 presents the sales volume by trade zone for the Nebraska firms. These firms sell to a greater extent than do the Alberta firms outside the boundaries of the state. Total intrastate sales of 50.3% of total sales is roughly equal to interstate sales of 47.8%. Total international sales represent 1.9% of all firms sales.

In contrast to Alberta firms, the Nebraska firms maintain a diversity of trading patterns. Local sales and interstate sales are more prominent than with Alberta firms. The state

Table 4.15. Sales volumes and percentages per person-month employed classified by trading area and sales grouping for Nebraska tradable firms, 1994.

(thousands of dollars)

Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	12.4	37.3	8.3	4.1	20.7	8.8
Rest of Nebraska	14.7	44.3	83.0	41.0	97.7	41.5
Interstate	6.0	18.1	106.6	52.6	112.6	47.8
Canada	0.1	0.3	1.9	0.9	2.0	0.8
Mexico	0.0	0.0	0.7	0.3	0.7	0.3
Other	0.0	0.0	2.0	1.0	2.0	0.8
Total	33.2	100.0	202.5	100.0	235.7	100.0

Table 4.16. Sales volumes and percentages per person-month employed classified by trading area and sales grouping for Sonora tradable firms, 1994.

(thousands of dollars)

Area of Trade	Group 1	% of Group	Group 2	% of Group	Totals	% of Group
Local	5.6	42.1	-	-	5.6	42.1
Rest of Sonora	5.4	40.6	-	-	5.4	40.6
Interstate	2.0	15.0	-	-	2.0	15.0
Canada	0.0	0.0	-	-	0.0	0.0
United States	0.3	2.3	-	-	0.3	2.3
Other	0.0	0.0	-	-	0.0	0.0
Total	13.3	100.0	-	-	13.3	100.0

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

outside the local area is still an important market but there is greater emphasis on sales to a wider market sphere. This is particularly true for Group 2 firms.

Group 1 firms sell the majority of their product (44.3%) within the state of Nebraska. Local sales are also important to this group with 37.3% of sales staying within the local economy. Interstate sales account for 18.1% of the remaining sales with Canada representing the only international market but representing only 0.3% of total sales.

Group 2 firms sell the majority (52.6%) of their product to interstate markets. Local sales account for 4.1% of sales while the rest of Nebraska is 41.0% of the group total. Total international sales are relatively small at 2.2% of total sales.

Sales volume by trade zone for the Sonoran firms is given in Table 4.16. The Sonoran

Table 4.17. Employee education levels of tradable firms expressed as a percentage of total employee sample and classified by sales group, Alberta, Nebraska, Sonora, 1994.

	Percentage								
	Alberta			Nebraska			Sonora		
	All Firms	Group 1	Group 2	All Firms	Group 1	Group 2	All Firms	Group 1	Group 2
Elementary	2.8	0.0	3.8	0.0	0.0	0.0	44.0	44.0	-
Junior High	8.3	7.1	7.7	4.3	0.0	6.1	20.0	20.0	-
Senior High	44.4	35.7	46.2	58.7	57.1	57.6	20.0	20.0	-
Technical/Vocational	30.6	42.9	19.2	19.6	28.6	15.2	8.0	8.0	-
Bachelor	11.1	14.3	19.2	10.9	7.1	15.2	8.0	8.0	-
Graduate	2.8	0.0	3.8	6.5	7.1	6.1	0.0	0.0	-
Post Graduate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

market is the most important for sales by Sonoran firms. Of the total, 82.7% is sold within the boundaries of the state. This proportion is split relatively equally between local trade (42.1%) and rest of Sonora trade (40.6%). Interstate sales are 15.0% of the total while the United States is the only international market for these firms. It accounts for the remaining 2.3%. Total sales per person-month are low for the Sonora firms at $13,300 relative to Group 1 firms in Alberta at $171,400 and Nebraska at $33,200.

4.8 Workforce and Flexibility

The ability of tradable enterprises and their systems to adapt to changing economic circumstances through changes in specialisation affects the rural population which comprise the employee base. In turn, the ability of the rural population to adapt with the tradable firms is in part a function of their skill and education levels. Greater skills and higher education may ease changes in specialisation. Flexibility is also a function of the dependency of the employee's household income on the tradable firm employment. Pluriactive households are less dependent on single incomes. This may translate into more flexibility in the system as labour is willing to shift jobs while maintaining an adequate household income.

4.8.1 Tradable Firm Employee Education

The education levels of the employees and each firm manager are presented in Table 4.18. These are expressed as number of employees at each level as a percentage of thetotal number of employees interviewed.

The greatest majority of employees in Alberta and Nebraska have completed a high school education. This contrasts dramatically with Sonora where the largest single group has only an elementary (inclusive of Grade 6) education. In Alberta, 88.9% of the workforce has a high school diploma or better. In Nebraska, this proportion is 95.7%. In Sonora, this percentage falls to 36.0%.

There does not appear to be a difference between the education levels of employees in Group 1 and Group 2 firms in either of Alberta or Nebraska with the exception that the Group 2 firms have fewer employees with a vocational or technical education and more with university educations than Group 1 firms.

4.8.2 Tradable Firm Employee Incomes and Flexibility

The employee questionnaire sought income levels for all jobs of the employee in addition to total household income. The purpose is to examine employee pluriactivity as well as dependencies on the tradable employment. For each firm, incomes were calculated as the average of the firm's employee sample to create an average employee income per firm. Each firm employee sample includes the owner/manager and other employees. Table 4.18 reports the mean of employee wages and household incomes on a person-month basis for the sales groupings in the three rural areas. Household income is defined as the total of gross employment earnings of all family members in the household.

The results indicate the importance of holding a job in a tradable firm relative to total household income. This employment is most important in the Sonoran rural area. Eighty percent of household income is derived from this employment. In all firms in the other two systems, 64 to 70% is derived from tradables employment. Employees of Group 1 firms in

Table 4.18. Tradable firm employee wages per month, household incomes per month and wages as a percentage of household income, Alberta, Nebraska, Sonora, 1994.

	Dollars								
	Wage per Month			Household Income per Month			Wage as a % of Household Income		
	Group 1	Group 2	Total	Group 1	Group 2	Total	Group 1	Group 2	Total
Alberta[1]	1,693	2,666	2,154	3,238	3,479	3,352	52.3	76.6	64.3
Nebraska	2,663	5,028	3,964	4,940	6,307	5,692	53.9	79.7	69.6
Sonora	593	-	593	737	-	737	80.5	-	80.5

Note: For reasons of confidentality, results for Sonora Group 2 cannot be reported.

1. Alberta sample is nineteen observations due to missing income data in two observations.

both Alberta and Nebraska rely less on tradables employment than do employees in Group 2. This is indicative of greater pluriactivity of households involved with Group 1 firms signifying lower dependence on a permanent full time job. In total, there appears to be greater flexibility in the rural households of Alberta and Nebraska to accommodate shifts in tradable activity.

4.9 Constraints to Expansion

Firm owners were asked to rank perceived obstacles to expansion of their business into new trade areas. Table 4.19 reports the count of votes for each constraint, regardless of their rank. These results are presented as percentages of responses of the particular constraint relative to the total number of responses. Tables 4.20 reports the results for the constraints ranked first, second and third among constraints.

Distance is the obstacle of greatest concern to the owners and managers in Alberta and Nebraska, mentioned by 16% of all respondents in both samples. In Sonora, this obstacle receives 6% of responses. Personal factors are rated of secondary importance for Alberta firms. This obstacle, receiving 13% of responses, is defined to include such factors as retirement possibilities of the owner and family lifestyle.

Personal factors are also of secondary importance to Nebraska firm owners and managers tying with workforce concerns at 14% of responses. Many owners and managers

Table 4.19. Perceived obstacles to tradable firm expansion in Alberta, Nebraska and Sonora ranked as a percentage of total responses.

	Alberta	Nebraska	Sonora
	%	%	%
Distance	16	16	6
Personal Factors	13	14	-
Financing	12	-	-
Regulations	7	7	-
Risk and Uncertainty	7	-	-
Market Arrangements	6	3	12
Trust	6	2	-
Contacts	6	7	15
Information	4	5	9
Workforce	4	14	3
Technology	4	2	-
Capacity Constraints	3	2	-
Time Constraints	1	2	-
Protection of Firm's Equity	1	2	-
Infrastructure	1	-	-
Age of Owner	1	2	-
Language	1	2	6
Farm Structure	1	-	-
Trade Programs	1	-	-
Tax Structure	1	-	3
Inability to Obtain Financing	-	7	21
Inputs	-	3	9
Protection of Firm's Identity	-	3	-
Limited Demand	-	2	3
Unwilling to Use Financing	-	5	12
Staying Power	-	2	-

attributed this workforce obstacle to the growth of successful tradable enterprises of all sizes in the study area. They noted that many of these firms compete for the same pool of qualified employees with similar education and skills. At the time of the study, the unemployment rate in the four county area was estimated to be about 2%.

The obstacle of greatest importance in Sonora is the inability to obtain debt or equity financing for expansion. This problem received 21% of the total responses. The high cost of debt financing, upwards of 25% interest from banks in Mexico, contributes to an

unwillingness to use debt financing, an obstacle which receives 12% of responses. Financing obstacles also received a high number of responses in Alberta with 12% of responses. Note that this obstacle was refined into two specific financing obstacles for the Nebraska and Sonora interviews. Respondents are asked to choose as an obstacle an inability to obtain debt or equity financing and/or an unwillingness to use debt or equity financing.

Market arrangements also rated highly as an obstacle in the Sonoran firms. Market arrangements is defined as the structure of the industry which constrains the selling or purchasing actions of new entrants. The extreme example of this obstacle is a monopoly which prohibits new entrants. This obstacle is interpreted to mean that firms are challenged by the need to develop new markets or to enter established markets.

Table 4.20 presents the obstacles to expansion which are ranked of first, second and third importance to the firm owner/managers. Government regulations are perceived to be the greatest obstacle to the expansion of tradable enterprises in both Alberta and Nebraska. This obstacle receives 22% of the first rank votes in Alberta and 14% in Nebraska. In essence, these regulations, which are not specified, represent non-cash transaction costs to the tradable enterprise.

In Alberta, financing, distance and market arrangements receive the greatest number of votes for the constraint of secondary importance. Each of these obstacles receive 18% of the second rank votes. The obstacles receiving the most votes for third rank are personal factors and trust. Trust is also a non-cash transaction cost inhibiting tradables development.

In Nebraska, personal factors receive an equal number of votes to regulations for the obstacle of most concern. These two constraints each receive 14% of the votes. Workforce constraints are the most important of the obstacles receiving second rank votes with 22%. As noted earlier, firms in this area are finding it increasingly difficult to attract qualified personnel.

Table 4.20. Obstacles to expansions categorized by three highest rankings, Alberta, Nebraska, Sonora, 1994.

	Ranking (percentage of total)								
	Alberta			Nebraska			Sonora		
	1	2	3	1	2	3	1	2	3
Regulations	22	-	-	14	-	8	-	-	-
Personal Factors	17	12	15	14	11	25	-	-	-
Risk and Uncertainty	13	-	8	-	-	-	-	-	-
Financing	13	18	8	-	-	-	-	-	-
Distance	13	18	8	10	17	8	8	9	-
Tax Structure	4	-	-	-	-	-	-	-	20
Capacity Constraints	4	-	8	5	-	-	-	-	-
Trade Programs	4	-	-	-	-	-	-	-	-
Trust	4	-	15	-	-	8	-	-	-
Contacts	4	12	8	-	11	-	15	9	40
Protection of Firm's Identity	-	-	-	-	11	-	-	-	-
Time Constraints	-	-	8	5	-	-	-	-	-
Limited Demand	-	-	-	-	6	-	-	9	-
Infrastructure	-	6	-	-	-	-	-	-	-
Farm Structure	-	6	-	-	-	-	-	-	-
Inability to Obtain Financing	-	-	-	10	6	8	46	9	-
Age of Owner	-	-	8	5	-	-	-	-	-
Information	-	-	8	-	11	-	8	9	-
Unwilling to Use Financing	-	-	-	5	-	17	15	18	-
Protection of Firm's Equity	-	-	-	5	-	-	-	-	-
Inputs	-	-	-	-	6	8	-	9	-
Workforce	-	12	-	10	22	8	8	-	-
Language	-	-	-	-	-	8	-	9	20
Technology	-	-	-	5	-	-	-	-	-
Market Arrangements	-	18	8	10	-	-	-	18	20
Staying Power	-	-	-	5	-	-	-	-	-
Total of Ranking Percentages	100	100	100	100	100	100	100	100	100

The obstacle receiving the most third rank votes, 25%, is personal factors. The firms are, in most cases, owner/operated. Personal lifestyle choices limit the size and management time commitments of these tradable enterprises.

In contrast to the two previous areas, the constraint most limiting expansion of tradable enterprises in Sonora is the inability to obtain debt or equity financing. This obstacle

receives 46% of the votes. Contacts as an obstacle and unwillingness to use financing each receive 15% of the first rank votes. Together, the two financing constraints constitute 61% of the first rank votes in Sonora. Clearly, Sonoran rural firms have difficulty expanding due to a lack of adequate funding.

The obstacles receiving the greatest number of second rank votes are the unwillingness to use financing and the market arrangements with 18% each. Contacts is the obstacle voted most often as being of third rank importance with 40% of votes. It is interesting to note that the first, second and third rank obstacles all relate to the firm's management capabilities. Each may be overcome with better financial and marketing skills in the Sonoran firms' management.

The three study areas appear to be at very different stages of development yet have similar patterns of obstacles. While the Nebraska economy may be the most developed in terms of size and trading patterns, there is little difference in the obstacles chosen by its firm owner/managers and those in Sonora. In each economy, there is no one constraint which is overwhelmingly predominant. The only obstacle which receives more than 20% of the votes is inability to obtain financing in Sonora. In each system, a wide range of constraintsis noted.

However, when ranking of the votes is compared, some variation appears among the three areas. The most striking difference is the very high ranking the Sonoran firms place on financing issues. Sixty-one percent of the first rank votes deal with financing. Forty-six percent of these votes note that the inability to obtain financing is most binding on expansion possibilities. This case of small firms underscores the importance and difficulty of capital acquisition to their success.

In Alberta and Nebraska, government regulations are seen to be constraining firm expansion. Firms in each area gave first ranking importance to this obstacle. This transaction cost can be combined with three other transaction costs which receive the three highest percentages in first ranking. Of the five obstacles which receive the most

Table 4.21. Obstacles to expansions ranked and categorized by the type of alliance associated with overcoming the obstacle, Alberta, Nebraska, Sonora, 1994.

	Ranking (percentage of total)											
	Alberta				Nebraska				Sonora			
	All Votes	1	2	3	All Votes	1	2	3	All Votes	1	2	3
Financial	18	19	27	11	20	27	8	43	15	67	27	0
Process	10	6	0	11	10	13	8	14	13	0	9	0
Strategic	71	75	73	78	71	60	84	43	72	33	64	100
Total	100	100	100	100	100	100	100	100	100	100	100	100

votes, regulations, risk and uncertainty and distance are all transactions cost related obstacles. In total, these obstacles represent 48% of the votes in Alberta. The combined obstacles of protection of firm's identity and protection of firm's equity which represent risk and uncertainty in the Nebraska questionnaire receive 29%. Transactions costs do not appear to be of the same concern in Sonora.

The constraints listed in Tables 4.19 and 4.20 are categorized into the type of economic alliance to which they would apply. Refer to Appendix 7 for this categorization. These results are presented in Table 4.21. In all cases but one, strategic alliances appear to be the type that would most overcome the obstacles selected by the firm owner or manager with 60-84% of the responses. Strategic alliances are alliances to steer the direction of the firm and involve the implementation of market penetration and expansion strategies

Obstacles which could be addressed by financial alliances represent a distant second with 15-20% of the responses. Process alliances to improve or expand the production or sourcing capabilities of these tradable firms could address the remaining 10-12% of the constraints selected.

Significantly different results occur when ranking is applied to the results. In Alberta and Nebraska, strategic alliances are still the form which may alleviate the greatest number of obstacles. However, the importance of financial constraints in Nebraska causes financial alliances to assume more importance with 27% of total responses.

The inability of Sonoran firms to access debt or equity financing results in financial

alliances assuming the greatest importance in the Mexican state. For first rank importance, 67% of responses indicate the need for some form of financial alliances to permit expansion of tradable enterprises. Strategic alliances would appear to resolve the remaining obstacles.

In the other two rankings of obstacles, strategic alliances account for the majority of responses (43-84%) in all areas. Financial alliances account for 8-43% of responses while process alliances could address only 8-14% of these last two rankings.

These results indicate that rural firms perceive a greater need to access new markets and supply sources than any other need. These concerns may be best addressed by strategic alliance. Surprisingly, financing concerns are of the greatest importance only in Sonora. In no cases or rankings do process alliances assume the greatest importance to alleviate process constraints. This indicates rural firms are satisfied with their production processes, regardless if they are artisan or more highly industrialised processes. However, process problems may be at the root of market access problems. Issues such as quality control, product specifications, timing and even cost may be the reasons why rural tradable firms cannot break into new markets. Process alliances may then be a useful tool to alleviate these constraints.

Chapter 5 Discussion and Interpretation

This chapter discusses the implications of the results presented in Chapter 4. The theory indicates opportunities for the development of non-traditional tradables in rural economic systems to reduce dependence on natural resources. These opportunities may lie in tradable enterprises being specialised in flexible production systems. Alliances may permit them to increase their competitive advantage, access entitlements and reduce transactions costs. Complementarities and disparities between potential alliance partners are discussed. Several hypothesis for rural development are questioned in light of the exploration of this research.

The theory developed in Chapter 2 is a holistic systems approach to rural development. This approach examines the economic relationships of tradable firms in different jurisdictions based on the theories' four theoretical cornerstones of predator-prey systems, development theory, trade, and entitlements. Alliances of firms and their economic systems can build upon these cornerstones to support growth and development. This chapter applies the evidence of the previous chapter to this framework. Economic alliances as a development option to combine beneficial aspects of individual systems to enhance competitive advantage are featured.

5.1 Competitive Advantage and Alliances

Competitive advantage lies not only in access to abundant and low cost resources but also in less readily imitated entitlements and property rights. Such advantages as differentiated products, differential knowledge and skills and proprietary technology are developed by and found in skilled people and the organizational structure of business and economic systems. Aspects of competitive advantage of concern to this discussion are input sourcing and productivity.

5.1.1 Input Sourcing

Firms in the Alberta and Sonora systems source a high percentage of their material inputs

from local or provincial/state suppliers (Tables 4.11 and 4.13). The Alberta firms may be locked into potentially high cost provincial sources due to interprovincial trade barriers. Sonoran firms purchase much of their inputs locally only due to the ability of local commerce to supply the necessary inputs for the low technology artisan production processes prevalent in this area. Inputs which state sources cannot supply must be purchased from the concentration of specialised suppliers in the country's largest cities, such as Guadalajara and Mexico City, adding increased transportation costs. The high US dollar-peso exchange rate prohibits these firms from seeking inputs from nearby cities and towns in Arizona.

In contrast, Nebraska firms are able to source to a great extent in the national economy thereby taking advantage of potentially lower price inputs. This sourcing effectively increases the competitive advantage of these firms through lower average and marginal costs of production.

Sourcing alliances may offer an opportunity to reduce input costs. The results suggest that such alliances may be of greater benefit to Alberta and Sonora firms than to Nebraska firms. However, inputs are not perceived to be a major obstacle to expansion in any of the three areas. None of the Alberta firms selected inputs constraints as a limiting factor in expansion (Table 4.19). The Nebraska rank inputs constraints of only secondary concern with 6% of responses. Sonoran firms ranked it second with 9% of responses. The potential for cost-reducing sourcing alliances may be therefore limited by the relative unimportance these firms place on input constraints.

5.1.2 Productivity Enhancement

High productivity may not be a hallmark of rural enterprises. According to Cameron (1993), smaller manufacturers tend to have lower productivity than larger counterparts. This research supports this statement. Productivity measured as sales per person month is reported in Table 4.7. In all cases, the Group 2 firms display greater partial factor productivity than do the smaller firms. This is particularly true in the Nebraska case. Here,

productivity increases from $3,153 per person month in Group 1 firms to $17,250 per person-month in Group 2 firms. The spread is less dramatically demonstrated in Alberta where productivity increases to $7,053 from $5,017 per person-month. This productivity spread corresponds with the spread in mean size of firms in both systems. There is a much greater range in sales volume between the smallest firms and the largest firms in Nebraska than there is in Alberta (Table 4.2).

Although no measure was developed for Group 2 firms in Sonora, note that firms in Group 1 have very low productivity as compared to the same category of firms in Alberta or Nebraska. The Sonoran firms produce only $507 per person-month.

These differences between the three economies imply that alliances of these particular systems could result in unequal partnerships. While the Alberta and Nebraska firms are similar in size, the productivity differential between the two economies could result in the benefits accruing to the partner with the ability to use its resources most productively. In this case, the Nebraska firms hold the advantage. Sales per person-month in all firms in Nebraska is $15,043 followed by $6,461 in Alberta and only $507 in Sonora. This difference leads to opportunities for over-predation among the partners rather than alliances built on mutuality.

Predation is also a concern for the Sonoran rural system. This system has a potential comparative advantage in their low wage workforce (Table 4.18). However, this attribute is a fleeting advantage, as noted in the theory. The ease of moving production facilities to lower wage economies means low wages are not a sustainable advantage. Instead, this trait creates predation on the social environment. The production firms, as predator, are mobile. The prey population and its local government is immobile and must accept low wages and give away entitlements or risk the loss of the employment opportunities. Any weakness of mutualism between firms and the population permits these firms to extract rent from the employed population as long as low wages are maintained. However, these same low wages may be a point at which tradables development through process and production alliances can begin, provided mutualism is maintained in the alliance.

Conceptually, this mutuality in the alliance is represented by a strengthening of the bonds between rural systems as represented by the arrows in Figure 2.1.

5.2 Economic Flexibility and Flexible Production

The three rural economies may be able to develop upon a strategy of tradables development based on flexible production. Incomplete specialisation and flexible production are complementary concepts. The success of these concepts in rural development is dependent on the ability of the economic system to adapt. Flexibility of the system and its population are important factors in this process.

Flexible production strategies, adapting quickly to the changing demands in the marketplace, provide a basis for small firms to develop (Cameron 1993, Piore and Sabel 1984). The wide range of enterprises in each of the studied economies demonstrate potential for this kind of strategy (Table 4.1). The present lack of specialisation at the area level creates possibilities for the economy to shift production relatively easily. This modification occurs according to changes in the economic signals of price, market demand and the various forms of transactions costs. System flexibility, very likely created without conscious direction from the population, is assisted by the flexibility of the employed population of the tradable firms.

Rural households in Alberta and Nebraska appear to have resources beyond the income derived from tradable employment. As illustrated in Table 4.18, tradable employment provides slightly less than 70% of household income in all firms. This is somewhat less in Group 1 firms and slightly greater in Group 2 firms. The lack of total dependence on tradable employment means there are monetary resources available to households, in addition to government entitlements to social assistance or unemployment insurance, to endure short-term firm slow-downs or closures as firms adapt production to shifting demands. Thus, flexibility of the rural economy needs to be found both in firms and in the population.

This flexibility may not be found in the Sonora rural system. There is greater specialisation

in this economy (Table 4.1), in wood, leather and primary metal industries, than in the other two economies. In addition, the greater dependence of the household on the tradable employment, combined with a low mean income level of $737 per month, indicates little flexibility for economic adjustment. The current lack of alternative employment in this area, as in much of Mexico, highlights the need for economic development but also underscores the difficulty in adapting to new economic realities. The Sonoran area of study may be limited in possible economic alternatives due to financing constraints and the low education (Table 4.17) and skill levels of its population.

5.3 Tradables Strategy

Enterprise development to reduce dependency on unstable resource economies needs to focus on firms trading or capable of trading beyond their rural market. This strategy has the effect of expanding the boundaries of the system thereby reducing the prey status of rural place economies. A prey status indicates a condition of dependence, immobility, low growth and few opportunities for youth in the economy. A reduction in prey status occurs through a process of improved inflows of funds purchasing rural goods and services creating greater and potentially better quality employment possibilities. The rate of development of tradable enterprises should be at least as fast as the relative decline of the importance of agriculture and other resource sectors and the emergence of a rural, low wage service economy. This replacement of the economic base of rural areas could reverse system closure and slow population migration to higher opportunity cost employment.

The concept of tradable goods and services is to produce a product which is valued by a customer distant from the local economy at a price which exceeds cost of production and transactions costs (Evans 1989). Transactions costs, particularly those that are distance related, can reduce competitive advantage of rural economies. One role of alliances is to reduce these transactions costs. Transactions costs, particularly transport, business licensing and other government regulations, hold back development of tradable activities. Many obstacles to expansion reported by firms relate to transactions costs.

Table 5.1. Spearman correlation coefficients measuring the ranked association between physical assets, talent assets and the talent asset/physical asset ratio and the volume of trade per person-month per area of trade, Alberta, 1994.

	Physical Assets per Person Month			Talent Assets per Person Month			Talent Assets/ Physical Assets		
Area of Trade	Group 1	Group 2	All firms	Group 1	Group 2	All firms	Group 1	Group 2	All firms
Supply- Province	0.13	-0.02	0.03	-0.41	0.35	0.08	-0.41	0.05	0.09
Interprovincial	-0.19	-0.03	-0.05	0.19	0.10	0.06	0.31	0.08	0.08
International	0.41	0.05	0.38	0.04	0.36	0.30	-0.08	0.46	0.12
Sales- Province	-0.03	0.43	0.28	0.65	0.63	0.66	0.50	0.44	0.33
Interprovincial	-0.05	0.45	0.26	0.62	0.52	0.52	0.53	0.35	0.30
International	0.33	0.78	0.54	0.71	0.33	0.43	0.31	-0.31	-0.18

Significance level indicated by *(10%), **(5%) and *** (1%).

While little direct evidence on transactions costs was gathered in the questionnaires, the identification of transaction costs as obstacles to firm expansion is indicative of the effect of transaction costs on tradables development. As noted in section 4.10, the three constraints of regulations, risk and uncertainty, and distance all represent significant costs to a firm's expansion. In Alberta, these constraints account for 48% of the total first rank responses in Alberta. In Nebraska, transaction cost obstacles were ranked first in 29% of responses. These costs contribute to uncertainty of firm owners and managers as they attempt to devise business strategies. The creation of new rural business structures such as alliances is impeded by this atmosphere of uncertainty.

Differences among economies and firms are central to the idea of alliances for tradables development. Competitive advantage is gained because economic systems are different (Porter 1990). The predatory element of many successful businesses is derived by the ability of these firms to recognize, enhance and act on competitive advantages. Export of goods and services from the rural system may require more of a change of mindset and operational strategy than any physical change in the system's economic structure.

5.3.1 Relationships of Assets and Areas of Trade

Development theory has associated structure with economic performance. Alternative

Table 5.2. Spearman correlation coefficients measuring the ranked association between physical assets, talent assets and the talent asset/physical asset ratio and the volume of trade per person-month per area of trade, Nebraska, 1994.

	Physical Assets per Person Month			Talent Assets per Person Month			Talent Assets/ Physical Assets		
Area of Trade	Group 1	Group 2	All firms	Group 1	Group 2	All firms	Group 1	Group 2	All firms
Supply- State	-0.17	0.59	0.33	0.42	0.20	0.36	0.08	-0.33	0.05
Interprovincial	0.43	0.07	0.08	-0.05	0.44	0.35	-0.10	0.53	0.41
International	0.12	0.24	0.08	-0.15	0.00	0.20	0.18	-0.30	0.15
Sales- State	-0.18	0.49	0.28	0.13	0.86	0.68	0.03	0.27	0.35
Interprovincial	0.28	0.07	0.04	0.15	0.08	0.23	0.02	0.12	0.33
International	0.12	0.09	0.01	-0.15	-0.10	0.10	0.18	-0.30	0.05

Significance level indicated by *(10%), **(5%) and *** (1%).

theories by business theorists present an argument for managerial direction in search of profits and entitlements rather than any structural relationships (Coase 1937, Grossman and Hart 1986, Mirus 1993, Porter 1986, Williamson 1981). This research examines relationships between assets and areas of trade to test the development literature hypothesis.

Spearman rank correlation tests are used to examine relationships between physical assets, talent assets and zones of trade outside the local area. The results are presented in Tables 5.1, 5.2 and 5.3. In each case, no correlations are significantly different from zero.

Table 5.1 reports the Spearman correlation coefficients (ρ or rho) for Alberta firms in Groups 1, 2 and in all firms. In most cases there is only a weak association between either physical or talent assets and the area of trade.

The most significant relationship is indicated between the assets of all firms and the area of trade. There is a negative correlation between physical and talent assets and area of trade. Rho values for physical assets of all firms increase from 0.28 to 0.54 as sales are made farther from the place of origin. Corresponding to this tendency, rho for all firms' talent assets decrease from 0.66 to 0.43. Substitution of physical assets for talent and the labour component in the production process is a major cornerstone of the development of

Table 5.3. Spearman correlation coefficients measuring the ranked association between physical assets, talent assets and the talent asset/physical asset ratio and the volume of trade per person-month per area of trade,Sonora, 1994.

	Physical Assets per Person Month	Talent Assets per Person Month	Talent Assets/ Physical Assets
Area of Trade	Group 1	Group 1	Group 1
Supply-State	0.17	0.36	0.13
Supply-Interstate	0.30	-0.16	-0.27
Supply-International	0.08	-0.04	-0.03
Sales-State	0.61	0.36	-0.08
Sales-Interstate	0.21	-0.11	-0.26
Sales-International	-0.16	-0.15	0.03

Significance level indicated by *(10%), **(5%) and *** (1%).

industrial processes from artisan production. These two tendencies are possible indications of this substitution, if wider geographic trade patterns imply increasing size of the firm. This research seems to corroborate this statement. Note that the largest firms in terms of sales also are those with the highest mean physical assets (Table 4.4) and they also market relatively greater volumes into more distant jurisdictions than do smaller firms (Table 4.13). This substitution is also present in the decreasing value of the talent asset-physical asset ratio coefficient which falls from 0.33 to -0.18 as sales move into international markets from provincial sales.

The same tendencies are visible in the Nebraska results in Table 5.2. However, this capital-for-talent substitution occurs inconsistently. This inconsistency is seen in the talent asset-physical asset ratio for sales of all firms. A declining correlation of physical assets of all firms with sales occurs at the same time as a decline in rho of talent assets of all firms. There is no substitution effect to support a capital-for-talent substitution.

The correlation coefficients for Sonora indicate a weakening association between both physical and talent assets and sources of supply and sales area. The talent asset-physical asset ratio increases from negative to positive values which indicates a strengthening but very weak association with product sold farther afield. The implication of this result is that

more talent assets are used by Sonoran firms as they sell to more distant markets. This evidence contradicts the idea of a progression of artisan processes to industrialisation occurs with increasing trade. This contradiction could imply that rural Sonoran firms are becoming more, not less, reliant on artisan enterprises, increasing the prey status of their rural economy and accelerating its closure and decline.

5.3.2 Relationship of Firm Age and Areas of Trade

A second test of association is used to examine the relationship of firm age to its area of trade. It has been hypothesized that firms become involved in exporting activity at certain stages of their life, with older firms more likely to export than more recently established firms (Stabler 1992). Generational funding policy to encourage exports would benefit from this test.

The Spearman correlation test is used again to measure the association between age of the firm and the area in which it sells its product. The tests are calculated to a maximum firm age of 15 years, plus or minus one year depending on the firm age in the data set. This age is selected to provide a reasonable length of time for relationships to develop. This test is not applied to each sales grouping as there are too few observations in each group to permit the calculations.

Table 5.4 presents the Spearman correlation coefficient matrix for the Alberta economy. There is evidence of a correlation between the area of sales and the age of the firm. Medium strength associations, with rho in the range of 0.35 to 0.49, are found between the age of the firm and the area in which it markets its product. However, rho both increases and deceases with the age of the firm signifying an absence of any tendency to export as firms age.

The correlations indicate a tendency to sell more to interprovincial and international sales zones of trade as firms age. The correlation coefficients are positive and rise as the firm age increases to eleven years. At this point the coefficients are 0.47 and 0.35 for interprovincial and international sales, respectively. However, these values are not

Table 5.4. Spearman correlation coefficients measuring the association between firm age and area of sales trade for Alberta firms.

Age of Firm	Spearman Correlation Coefficient		
(years)	Alberta Sales	Interprovincial Sales	International Sales
2	0.16	0.03	0.04
3	-0.11	-0.09	-0.14
4	0.25	0.23	0.13
5	0.24	0.11	0.09
7	0.13	0.16	0.12
9	0.42	0.49	0.37
11	0.27	0.47	0.35
13	-0.46	-0.39	-0.04

Significance level indicated by *(10%), **(5%) and ***(1%).

significantly different from zero at the 90% significance level. At 13 years of firm age, the correlations become negative. This result suggests a tendency for firms to sell less in all three areas as the firm reaches this age. It is unclear why this result occurs. A possible explanation is that the firm has reached a point where the owner/operator is "winding-down the operation" in anticipation of retirement. This corresponds with the high ranking accorded to personal factors as obstacles to firm expansion in Table 4.20.

Similar associations of correlation coefficients are presented in Table 5.5 for the Nebraska firms. The exception is the tendency to declining coefficients for older firms trading at the state and international levels. As the firm ages, rho become more negative for Nebraska sales. This indicates fewer sales to this region and more to distant markets until an age of 14 years is reached. From this age, rho becomes positive and then negative again. No pattern is visible for interstate sales as rho rises and falls erratically as firm age rises.

At the same time, the correlation between firm age and international sales increases. From a weak positive rho of 0.11 at 1 year of age, the coefficient increases to 0.29 and then declines to 0.27 at 14 years. Increasing international sales over time are indicated. At 15 years, rho falls to 0.16, similar to the decrease in correlation values for the older Alberta firms. None of the coefficients are significantly different from zero at 90% significance

Table 5.5. Spearman correlation coefficients measuring the association between firm age and area of sales trade for Nebraska firms.

Age of Firm	Spearman Correlation Coefficient		
(years)	Nebraska Sales	Interprovincial Sales	International Sales
1	0.24	0.25	0.11
3	0.08	0.25	0.11
5	0.02	0.23	0.17
6	-0.05	0.31	0.17
10	-0.06	0.18	0.16
12	-0.13	0.40	0.29
13	-0.13	0.21	0.26
14	0.06	0.06	0.27
15	-0.02	-0.11	0.16

Significance level indicated by *(10%), **(5%) and *** (1%).

level, preventing definitive conclusions.

In Sonora, there are strong associations between state sales and the age of the firm. Rho ranges up to 0.75 at a firm age of seven years. In contrast, rho is near zero or negative for interstate sales and strongly negative for international sales, indicating little positive correlation between the age of the firm and tendencies to sell outside the state. The negative coefficients indicate that out of state sales actually decline as the firm ages. Given the very small size and artisan nature of the rural Sonoran firms in this study, this is not a surprising result. Only one of the coefficients is significantly different from zero.

These correlation results provide inconclusive support to the idea of generational funding based on quantity of sales to a certain trade area. In most cases, there are only weak associations between the area of trade and the age of the firm. In the Alberta results, the results do indicate a decline in rho for provincial trade and an increase for interprovincial and international sales. The results for Nebraska give mixed signals. Rho decreases for state sales and tends to increase for international sales. However, no pattern is observed for out-of-state sales. In Sonora, the results clearly state that out-of-state sales decline as firms age.

This contradictory evidence may have many reasons other than age or physical size of the

firm. These include the small number of observations, firm management, political or economic situation or personal reasons. Exporting can occur through the need to expand into new markets in order to continue growth. This would follow the age and area of trade correlation framework. However, a business strategy may involve exporting at the date of startup. This is the case of at least one firm in this research. Alternatively, the political and economic situation may inhibit international sales. This is a major constraint for Sonoran development. The current recession in Mexico prevents many consumers from purchasing anything more than basic necessities. At the same time, regulations and the Mexican bureaucracy are still formidable challenges for firms attempting to export into the United States or Canada, resulting in high transaction costs which impede tradables development.

A final reason for the contradictory evidence lies in the personal reasons for the existence of many rural tradable enterprises. These firms are, in many cases, owner/operator businesses. The owner is responsible for all aspects of the business and must balance firm and family concerns. Lifestyle choices may mean the firm remains small and trades within a limited area. This is a relevant concern for a development strategy based on tradables. How much can be expected of the small firm owner/operator to create viable enterprises and employment? Are rural economies, comprised of many of these small firms, in a position to resist external predatory pressures? In efforts to survive uncertainty, are these firms attempting diversification into other activities with limited trading potential rather than shifting specialisation to more lucrative activities? Does this diversification contribute to stagnation of the rural economy? These are all topics for further research.

5.3.3 Alliances of Tradable Firms and Rural Systems

Rural economies remain vibrant participants in the economy when they meet three conditions. First, is access to larger source and sales markets for their goods and services. The second is reduced predatory pressure on rural economies or, alternatively, increased predative abilities. The third is structural adjustments to maintain flexibility yet enhance firm productivity and capacity to produce.

The rural economy has a stake in the success of its tradable firms. These firms offer opportunities to increase the amount of rent its assets accumulate in the rural economy through employee wages, firm profits and taxation. This rent is gained through the sale of goods and services outside the economy. The rural system requires a method which permits rural firms to access new sources of rent while retaining or increasing their overall productivity. Alliances of rural tradable firms give the rural system a means to this end through access to larger and more profitable markets and input sources, greater financial resources, and newer and more productive production processes and technology.

The first obstacle which alliances may overcome is access to sources or markets. Small economies such as rural systems require access to larger economies to both source inputs or to sell the goods or services produced in the rural firms. The evidence in this research suggests that the Alberta East Parkland economy is dependent on the provincial economy for much of its material inputs. The same dependency applies for the Sonoran system. These dependencies create the condition whereby suppliers can extract rent in the form of higher prices through entitlements such as interprovincial trade barriers. In contrast, Nebraska firms source from a much wider trade area. They are able to access more suppliers which potentially translates into lower input costs.

One benefit to firms in alliances lies in access to lower cost inputs. Although no data was gathered on individual inputs prices, the small firms in this study would probably not have the capacity to individually negotiate low price, high volume purchases of inputs. However, groups of similar firms could act as a buying group to purchase collectively. The benefit to individual participants could be less expensive inputs. The drawback for the rural systems examined, with the possible exception of rural Sonora, is the lack of any specialised activities. As documented in Table 1, there is a wide spectrum of industries in each system with no single industry predominating. This variety would hinder the establishment of this type of alliance in any one rural area as each industry's needs are unique. However, cross boundary purchasing alliances could be established to the benefit of complementary firms.

Access to larger markets than those presently available to rural firms could also benefit from an alliance strategy. Alliances with similar or complementary business structures in other systems could provide the rural firm opportunities to expand its boundary by accessing other markets. The Nebraska economy appears to be the most open in terms of access into other jurisdictions (Table 4.15). Firms in this system sell over 40% of the system's output to markets outside the state. Alberta and Sonoran rural firms in alliances with Nebraska counterparts could gain admittance to these established markets. In return, the Nebraska firms would be able to sell in the alliance partners' market. Returns from these sales accrue according to the ownership rights and entitlements of partner. In each situation, the systems' boundaries enlarge through access to new markets.

Rights and entitlements are another benefit to the rural firm in alliances. Rent is accumulated according to the ability of firms to expand its boundary by accessing entitlements unavailable in the local system. These may include such entitlements as exclusive production or marketing rights, or entitlements to government incentives and subsidies. This research examined entitlements by observing obstacles to expansion. Marketing arrangements and government regulations are two obstacles which represent entitlements to inhibit entry of competitors into markets or the industry. The cost of entry is a transaction cost which raises the cost of the non-entitled firm's product to uncompetitive levels. A single example of government granted entitlements was found in Nebraska while many examples of brand name marketing, which extracts rent through exclusivity, were found. Generic output production impedes rent extraction ability through competitive behaviour. Sonoran furniture producers realised this dilemma but were unwilling to examine an alliance structure to reduce this destructive behaviour.

Productivity and flexibility enhancement are critical for rural economies. Incomplete specialisation is guided by economic signals. The ability of rural systems to adjust specialisation results from the productivity and flexibility of its firms and the flexibility of its population and local social institutions.

The lack of specialisation in all three systems creates opportunities for flexible production

activities. Overall production in each economy can be adjusted due to the diversity of industries present. The productivity of these shifts in specialisation will be different in each economy, however. The Nebraska area has the most productive firms of the three systems. In contrast, the Sonoran firms are only 1/30th as productive per person. Obviously, the Sonoran economy has the most to gain from alliances to improve productivity. However, they do offer a low wage workforce in return, provided mutualism is maintained between alliance partners to mediate predatory activity on the workforce.

The Alberta and Nebraska rural areas offer the best opportunities to create alliances which enhance economic flexibility based on the workforce of firms producing tradables. The requirement to shift production specialisation to maintain rent extraction capacity is dependent on the ability of the rural workforce to learn both new skills and processes and to withstand periods of low or non-existent income. The two northerly economies have more highly educated workforces than does the Sonoran rural economy (Table 4.17). This may imply that these employees are more capable of adapting to new work regimes than is the Sonoran workforce.

The Sonoran workforce also has less capacity to endure periods of specialisation shifts involving periods of unemployment. In Sonora, 80% of household income is derived from the tradable employment. This compares with 64% in Alberta and 69% in Nebraska. These two workforces have greater sources of additional income to rely on in times of unemployment. These include such government assistance programs as unemployment insurance and welfare. There are no such programs in Mexico.

5.3.3.1 Alliances Types for Tradables Development

There are three basic types of alliances applicable to rural economies. They are financial, process and strategic. Each plays a distinct role in the production transformation and marketing process which underlies the entire tradable goods and services sector. One of the primary benefits to rural firms is that alliances tend to reduce risk to individual partners. Those factors which may inhibit rural tradable activity, such as distance and lack

of information, can be alleviated somewhat by an alliance with a firm with abilities to overcome the specific disadvantage.

Financial alliances represent the means to access debt or equity capital through alliance partnerships to which they would not otherwise be entitled. Partners take a debt or equity position in the partners, thus sharing ownership and/or management. This influx of funds allows the expansion or improvement of productive capacity, product development, market penetration or other goals as determined by the alliance cooperatively and partners individually. Non-equity alliances are generally based on cooperative or predatory interests.

Of the three rural areas, the firms in Sonora feel their most important obstacle to economic expansion is financial assistance (Table 4.19). High interest rates in Sonora represent a tangible transaction cost inhibiting tradables development. Financial alliances are feasible in Sonora provided the firms' owners are willing to permit a degree of ownership to be held by the financial partners. Anecdotal evidence suggests that ownership and managerial control is not a large concern for many of the Sonoran businessmen. Additional benefits of this type of alliance may be new management ideas, marketing expertise and productivity enhancement which come with new ownership.

The second type of alliance is a process alliance which involves production process design and innovation in order to retain or achieve competitive advantage. This alliance affects the design and production activities to coordinate product development, input procurement and process improvement among the partners (Cameron 1993). Specialised yet flexible production processes are the end result. A lack of clear competitive advantage makes this especially important. Few owners and managers selected obstacles which are process obstacles, such as inputs and technology. Process alliances accounted for 10% of all votes and a maximum of 13% of first rank votes in Nebraska. This may imply a lack of foresight towards innovative activity which may be forthcoming through a process alliance.

The third type of alliance is a strategic alliance. This form, an alliance to steer the direction of the firm, involves the implementation of market penetration and expansion strategies (Cameron 1993). These create the conditions which allow rural firms and economies to increase their predative activities and thereby the sustainability of the system. It is necessary for rural economies to reduce their prey status and dependence on other systems and institutions to capture the benefits from increased productivity. Strategic alliances also permit rural systems to reduce transactions costs by accessing entitlements in other systems.

Strategic alliances address most of the selected obstacles to expansion in Alberta and Nebraska. In Alberta, strategic alliances represent 75% of first rank concerns while in Nebraska this number is 60%.

The results of the questionnaires indicate that firm owners and managers recognize obstacles to expansion of their own businesses. However, it is unclear if they also see the role of alliances in solving these problems. This may one of the greatest obstacles to implementing alliances in rural places. Anecdotal evidence also suggests that trust, the basis for alliance building, is not to be found in relationships among firms within these rural economies. Instead, trust has been replaced by a competitive mentality in which all other businesses are potentially dangerous. This often prevents firms from working together even when a firm is in decline. Interestingly, the dire straits of some Sonoran rural firms and their willingness to relinquish full control of their firms in return for employment may assist the Sonoran rural economy. Provided a claim to economic rents is maintained by Sonoran stakeholders, the necessity of survival may be the key which permits the implementation of alliances with the end result of strengthening the rural system.

Chapter 6 Summary, Limitations and Conclusions

6.1 Summary

Tradables development for rural economic systems is explored in this research. A comparative analysis of similar economies in Alberta, Nebraska and Sonora is used to examine the possibilities for alliances as a development option for rural firms and economic systems.

As agriculture and other resource extractive industries are becoming less important to the economic well-being of rural places, they are being replaced by a dependence on income transfers from government and nontradable activities. The rural economy then attains a prey status subordinate to external economic forces as it loses capacity to determine its own direction. In a systems context, this represents a closing of the rural system as fewer rent earning economic transactions are conducted between the rural economy and urban systems. Closing chokes off growth and opportunity, chasing off youth, devaluing retirement assets, locking in seniors, removing public services and reducing commerce sales volume to uneconomic and uncompetitive levels. Tradable enterprises present an opportunity for rural places to reverse this trend. The difficulties for small artisan enterprises with low productivity, few competitive advantages and high transactions costs are studied. Alliances are examined as means to overcome these perceived disadvantages.

This research uses classical and neoclassical economic thinking in amalgamation of systems, predator-prey, development, trade and export theory, and entitlements and transactions costs theory to examine the complexity which makes up rural economies and their tradable component. This theoretical approach seeks to overcome the reductionist neoclassical economic tendency to examine only part of an economic problem. Instead, this thesis takes a holistic view of the problems and opportunities for tradables development.

Interviews of non-resource extractive tradable firms are conducted in east central Alberta, east central Nebraska and north east Sonora. Questionnaires are used to gather data about

individual firms and their employees. This data is aggregated to obtain the structure and trading patterns of the tradable sector of the rural economies. Two categories of firms are derived based on sales volume. They are less than and greater than $500,000 in annual gross sales. This categorization allows a comparison of attributes between firms of different sizes and business activities.

The results obtained indicate a tradable sector comprised of small firms trading to a large extent within the confines of the respective province or states. A divergence is seen between the largest Nebraska firms and those of the same category in Alberta. While the provincial market remains the primary market for Alberta firms, the second group of Nebraska firms sells more than half of its output in interstate trade. A similar situation occurred for input sourcing. The Alberta and Sonora firms appear to be dependent on their respective provincial or state economies for both sourcing and sales.

The largest Nebraska firms are also the most productive in terms of output per person-month employed. Alberta firms in Group 1 are the most productive of this category but are less than a third as productive as the Group 2 Nebraska firms. The Sonoran firms are a distant third in terms of productivity.

The flexibility of the economy and its ability to shift specialisation through adoption of new production processes is reflected in the education levels and income dependence of the tradable firm's employees. The Alberta and Nebraska firms are positioned to permit a relatively painless transition in comparison to their Sonoran counterparts. The employee bases of the Albertan and Nebraska firms are equally well educated and the majority have a high school education or greater. This contrasts dramatically with the education levels in Sonora where less than forty percent have a minimum of high school education.

Household incomes of tradable employees in Alberta and Nebraska are not completely dependent on the tradable firm employment. These households derive 30-40% of their incomes from sources other than the tradable job. In contrast, over 80% of the Sonoran household income is comprised of the tradable firm wage. In addition, employees in

Alberta and Nebraska have access to government income entitlements in the form of unemployment insurance and social welfare. There is not the same urgency for year round employment in these two economies as there is in Sonora. Workers in Mexico simply have fewer resources on which they can rely. This fact implies the Alberta and Nebraska rural systems have an inherent advantage in flexibility to adapt which is unavailable to systems in Mexico.

Obstacles to expansion are also examined. The owner/managers were asked to rank the obstacles they perceive to be the most important in terms of expansion of their enterprise. The most critical obstacles for Alberta and Nebraska reflect forms of transaction costs. Regulations are of first rank importance. These regulations increase the cost of production and movement to markets thereby reducing the competitive advantage of rural enterprises. The effect of regulation compliance is difficult to measure but are very real constraints to tradables development. Other transaction cost obstacles are also ranked highly. These include risk and uncertainty, financing difficulties and distance. Surprisingly, the distance obstacle is not ranked highly overall as a constraint to rural tradable enterprises. Spatial economics would dictate that firms locate near their intended markets to economize transportation costs or near other similar producers to achieve agglomeration economies.

In Sonora, the most important obstacles involve financing. An inability to obtain debt or equity financing and an unwillingness to use this financing received a total of 61% of first rank votes. High interest rates, dependence on the state for sales and a recessionary economic climate in Mexico contribute to the difficulty of expansion. Anecdotal evidence demonstrates that Sonoran firm owners are the least concerned, of the three areas studied, with loss of ownership and management control in alliances.

It is hypothesized that the structure of the tradables sector would have a direct bearing on its trading patterns. This proved to be unfounded. The inequalities between the structure of the three systems appear to have little impact on how the firms themselves conduct activities. There is little correlation between the areas of trade and the size of the firm in terms of either physical or talent asset valuation. This test would seem to contradict

conventional development theory which would emphasize that growth of the firm occurs with an expansion in trade. Instead, managerial talent and business strategy is hypothesised as the reason for areas of trade.

A policy of generational funding to stimulate the growth of an export sector is rejected in this research. Age of the firm also does not appear to be a factor in the marketing patterns of the tradable firms in any of the economies.

Alliances are a promising development for rural tradables development. Alliances of tradable firms can overcome constraints which inhibit the competitiveness of rural economies. These include limited financing for expansion, little product or market development, high transactions costs and uncertainty created by falling trade barriers. A primary obstacle to alliances is the difficulty in finding suitable partners and maintaining trust in the relationship. Alliances based on flexible production strategies show the most promise.

Obstacles to expansion are classified into alliance categories. Strategic alliances related to markets and transactions are seen to be the type which would alleviate the most obstacles to expansion in Alberta and Nebraska. This alliance allows access to new sources and markets as well as entitlements. In contrast, financial alliances are most important in Sonora. This results corresponds with the overwhelming selection of financing obstacles. Process alliances are not a first choice for alliance creation in any of the three areas.

6.2 Limitations of the Research and Further Research

The main limitations of this research lie in the data constraints imposed by the geographical limitations of the project. The research is limited to relatively small geographical areas and consequent number of tradable firms in each area. Further research should examine a large sample of firms across one of the provinces or states. More depth and less breadth of data collection would provide insight into the issues uncovered in this research.

The size of the area also constrains the use of secondary data sources. The confidentiality restrictions of statistical agencies like Statistics Canada prevent data tabulations in small and sparsely populated areas. This problem may restrict the ability of research to be conducted in rural areas using secondary data. The long term conclusion is that rural areas will be ignored in detailed small area research using secondary data.

The definitions of talent assets, competitive advantage, entitlements and transactions costs require clarification if they are to be used in empirical research. The present generalised definition of talent assets is conceptually difficult to explain, understand and measure. Identifying individual components of employee talent, such as accumulated skills and knowledge of welding in fabrication shops, would allow comparisons of these components and the success of the firm and its economic system. Similarly, specific transaction costs need to be defined which cover a wide range of the constraints on firms relative to entitlements and property rights. Monetary proxies need to be developed for those costs which are not numerical.

This research involved a simple cross sectional analysis of the tradable activities in early to mid 1994. Further research should examine the dynamics of tradables development in an effort to uncover changes in relationships over time. Changes in specialisation, or the lack thereof, changes in competitive advantage and changes in wealth creation should be examined. This research would allow an examination of long-run determinants of economic and social progress; not only in individual firms and communities, which reverts to the competitive model, but for entire individual economies and systems of allied economies.

Research should also focus on the implications for rural economies of small owner/operated tradable enterprises. These types of enterprises may have a limited life span which is useful for rural wealth creation only as long as the owner/operator is willing to contribute his time and effort. Lifestyle choices may constrain the growth of these firms and their ability to compete globally. Research can examine the possible avenues for ownership transfer of these firms. Alliances may be a means to facilitate this transfer.

Further research should examine the role of social structures in rural economies to facilitate tradables development and alliance creation. This research has begun with an examination of social networks as a catalyst to economic development. This sociological work will examine the same Alberta and Nebraska rural systems as this thesis research.

6.3 Conclusions

The primary objective of this research was to explore the possibilities for cross border alliance building in rural tradables. It is concluded that the complexity of the task rests not only on economic incentives but as much on a fundamental re-examination of the usefulness of the competitive model as a basis for modifying rural development. The firm owners and managers each see themselves in isolation. Their firm is in competition not only with firms in other countries but also in the next town. The results illustrate the difficulty for these owners trying to compete with global enterprises. Tradable firms in each of the three economies are small relative to the rest of the world. Mean size in terms of sales volume of all firms in Alberta is only $569,000 while it is $1,285,000 in Nebraska and $509,000 in Sonora. When these firms are dissaggregated into two sales groupings the size differential is very apparent. The smallest firms in each economy have sales volume means ranging from $94,000 to $225,000. These represent more than half of the firms interviewed. The largest firms (Group 2) have mean sales volumes ranging from 1,028,000 to $2,259,000. On a world scale, all the firms examined in this research are small players.

The sampled tradable firms' trade patterns show a dependency on the province or state economy, with the possible exception of Group 2 firms in Nebraska. The Alberta and Sonora firms in all cases are dependent on their respective province or state for input sourcing and marketing. The implication is that these firms may be limited in their ability to attain competitive advantage relative to other systems. They also may be caught in a prey position to urban suppliers and markets which hinders their rent extractive and wealth creation abilities.

Alliances allow firms to cooperate to mutually benefit the partners. Financial, process and strategic alliances each have a role to gain or enhance competitive advantage for rural enterprises. Alliances which enhance scope for flexible production strategies that are able to reduce their response time to new challenges have the potential to reduce present dependencies on income transfers and nontradable activities in rural places.

Specialisation of each economy affects the productive use of its resources. In each economy there is no clear tradables specialisation activity. Sonora may have a specialisation in the furniture and fixture industry. However, this is only four of twelve firms. It can be speculated that each economy is in the process of shifting specialisation resulting in the situation presented in this research. The lack of time series data prevents us from drawing this conclusion, however.

Shifts in specialisation occur according to long term changes in economic signals of price and demand. The ability of each economy to adapt to a new specialisation is a function of its firms and their employees. This research indicates that Alberta and Nebraska are in a better position to adapt due to the flexibility of a well educated workforce and the ability of this workforce to withstand periods of adjustment. Much of this ability may be due to entitlements of the population to government funded unemployment and welfare assistance. Sonoran employees lack any kind of compensation for periods of economic restructuring.

The results presented in this research suggest that tradables development in rural areas may not only generate growth but also increase the predatory ability of rural places relative to the rest of the world. Successful tradable activity benefits the overall economy and the rural economy. However, when development of rural systems involves subsidies from urban populations or rent extraction for the benefit of relatively few rural people, the costs may become prohibitive and politically unsupportable. Income transfers may remain the foundation of rural policy for rural incomes because this policy may be more palatable than market interventions.

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Appendix 1

Major Group Standard Industrial Code Classifications of Tradable and Nontradable Goods and Services

Tradable Goods

SIC Code: Major Group	Industry
10	Food Industries
11	Beverage Industries
12	Tobacco Products Industries
15	Rubber Products Industries
16	Plastics Products Industries
17	Leather and Allied Products Industries
18	Primary Textile Industries
19	Textile Products Industries
24	Clothing Industries
25	Wood Industries
26	Furniture and Fixture Industries
27	Paper and allied Products Industries
28	Printing, Publishing and Allied Industries
29	Primary Metal Industries
30	Fabricated Metal Products Industries
31	Machinery Industries
32	Transportation Equipment Industries
33	Electrical and Electronic Products Industries
35	Non-metallic Mineral Products Industries
36	Refined Petroleum and Coal Products Industries
37	Chemical and Chemical Products Industries
38	Other Manufacturing Industries

Tradable Services

SIC Code: Major Group	Industry
02	Service Industries Incidental to Agriculture
09	Service Industries Incidental to Mineral Extraction
41	Industrial and Heavy (Engineering) Construction Industries
42	Trade Contracting Industries
44	Service Industries Incidental to Construction
45	Transportation Industries
46	Pipeline Transport Industries
48	Communication Industries
49	Other Utility Industries
50	Farm Products Industries, Wholesale
51	Petroleum Products Industries, Wholesale
52	Food, Beverage, Drug and Tobacco Industries, Wholesale
53	Apparel and Dry Goods Industries, Wholesale
54	Household Goods Industries, Wholesale
55	Motor Vehicle, Parts and Accessories Industries, Wholesale
56	Metals, Hardware, Plumbing, Heating and Building Materials Industries, Wholesale
57	Machinery, Equipmentand Supplies Industries, Wholesale
59	Other Products Industries, Wholesale
71	Consumer and Business Financing Intermediary Industries
72	Investment Intermediary Industries
73	Insurance Industries
74	Other Financing Intermediary Industries
77	Business Service Industries
81	Federal Government Service Industries
82	Provincial and Territorial Government Service Industries

SIC Code: Major Group	Industry
84	International and Extra-territorial Government Service Industries
85	Educational Service Industries
86	Health and Social Service Industries
91	Accomodation Service Industries
92	Food and Beverage Service Industries
96	Amusement and Recreational Service Industries
99	Other Service Industries

Nontradable Goods

SIC Code: Major Group	Industry
40	Building, Developing and General Contracting Industries

Nontradable Services

SIC Code: Major Group	Industry
47	Storage and Warehousing Industries
60	Food, Beverage and Drug Industries, Retail
61	Shoe, Apparel, Fabric and Yarn Industries, Retail
62	Household Furniture, Appliances and Furnishings Industries, Retail
63	Automotive Vehicles, Parts and Accessories Industries, Sales and Service
64	General Retail Merchandising Industries
65	Other Retail Store Industries
69	Non-Store Retail Industries
70	Deposit Accepting Intermediary Industries
75	Real Estate Operator Industries (Except Developers)
76	Insurance and Real Estate Agent Industries
83	Local Government Service Industries
97	Personal and Household Service Industries
98	Membership Organization Industries

Appendix 2

Sonora Firm Questionnaire

Cuestionario para Compañias Comerciales Rurales de Sonora

David Fullerton

Departmento de Economia Rural
Universidad de Alberta
Edmonton, Alberta, Canada

12 de agosto de 1994

Cuestionario para Compañias Comerciales Rurales de Sonora

Sonora Rural Tradeables Firm Questionnaire

Código Postal de la Comunidad_____ **Fecha:** _____ /94

(Community Postal Code) (Date:)

Identificación de la Comunidad_____ **Nombre de la Compañía**:_____

(Community ID) **Dirección:**_____

(Address) _____

A. Preguntas Generales

(General Questions)

1 **¿Cuándo se estableció esta compañía?** 19_____

(When was this firm established?)

2 **¿Qué producto(s) o servicio(s) produce o mercadea su firma, y cuáles son los porcentajes de venta?**

(What product(s) or service(s) does your firm produce or market, and what are the sales percentages?)

	Producto/ Servicio	**Porcentaje**
a)	_____	_____
b)	_____	_____
c)	_____	_____
d)	_____	_____
e)	_____	_____
f)	_____	_____
g)	_____	_____

3 **¿Cuál fue él volumen bruto de venta en el año fiscal de 1992 (selecceione el volumen)?**

(What was the firm's gross sales volume in fiscal year 1992 (select the volume)?)

menos de N$240,000	_____	2,400,001 - 3,600,000	_____
240,001 - 480,000	_____	3,600,001 - 4,800,000	_____
480,001 - 720,000	_____	4,800,001 - 6,000,000	_____
720,001 - 960,000	_____	6,000,001 - 7,200,000	_____
960,001 - 1,200,000	_____	7,200,001 - 8,400,000	_____
1,200,001 - 1,440,000	_____	8,400,001 -9,600,000	_____
1,440,001 - 1,680,000	_____	9,600,001 - 10,800,000	_____
1,680,001 - 1,920,000	_____	10,800,001 - 12,000,000	_____
1,920,001 -2,160,000	_____	más de 12,000,001	_____
2,160,001 - 2,400,000	_____		

4 Valorise los bienes de la compañía (lo más cercano a N$):

Place a value on the assets of the business (to the nearest N$)

Valor de los Bienes Físicos: El valor del terreno, edificios, maquinaria e inventario de propiedades de lacompañía.

(**Physical Asset Value**: the value of land, buildings, machinery and inventory owned by the business.)

Valor del Talento: El valor para la empresa de la experiencia y talentos de la gerencia y empleados.

(**Talent Assets**: the value to the business of the experience and talents of the management and the employees.)

Bienes Físicos (Physical Assets)		**Bienes de Talento** (Talent Assets)	
menos de N$240,000	_____	menos de N$240,000	_____
240,001 - 480,000	_____	240,001 - 480,000	_____
480,001 - 720,000	_____	480,001 - 720,000	_____
720,001 - 960,000	_____	720,001 - 960,000	_____
960,001 - 1,200,000	_____	960,001 - 1,200,000	_____
1,200,001 - 1,440,000	_____	1,200,001 - 1,440,000	_____
1,440,001 - 1,680,000	_____	1,440,001 - 1,680,000	_____
1,680,001 - 1,920,000	_____	1,680,001 - 1,920,000	_____
1,920,001 -2,160,000	_____	1,920,001 -2,160,000	_____
2,160,001 - 2,400,000	_____	2,160,001 - 2,400,000	_____
2,400,001 - 3,600,000	_____	2,400,001 - 3,600,000	_____
3,600,001 - 4,800,000	_____	3,600,001 - 4,800,000	_____
4,800,001 - 6,000,000	_____	4,800,001 - 6,000,000	_____
6,000,001 - 7,200,000	_____	6,000,001 - 7,200,000	_____
7,200,001 - 8,400,000	_____	7,200,001 - 8,400,000	_____
8,400,001 -9,600,000	_____	8,400,001 -9,600,000	_____
9,600,001 - 10,800,000	_____	9,600,001 - 10,800,000	_____
10,800,001 - 12,000,000	_____	10,800,001 - 12,000,000	_____
más de 12,000,001	_____	más de 12,000,001	_____

5 ¿Cuál fue la base de su capital inicial y cuánto fue?

(What was the basis of your start-up capital and how much?)

	Propio (N$) (Own ($))	**Familia (N$)** (Family ($))	**Socio (N$)** (Partner ($))
Fondos netos (Equity)	_____	_____	_____
Dueda (Debt)	_____	_____	_____

6 ¿Cuál fue la tasa dueda-fondos netos de su compañía al final de 1992?

(What was your firm's debt-equity ratio at the end of 1992?)

N$ Compromisos _____ = _____ = _____

N$ Fondos netos del dueño

7 ¿Cuál es la estructura de propiedad de esta compañía?

(What is the ownership structure of this firm?)

Un solo propietario _____

(Sole proprietorship)

Sociedad _____

(Partnership)

Co-operativa _____

(Co-operative)

Compañia Limitada _____

(Limited company)

Otra _____

(Other)

¿Está esta compañía afiliada con otra?

(Is it affiliated with another firm?)

Sí _____

No _____

En qué forma? (How?)

Planta subsidiaria (Branch Plant) _____

Concesionaria (Franchise) _____

Compañía Tenedora (Holding Company) _____

Otre _____

B. Preguntas acerca de la fuerza laboral.

(Workforce Questions)

---

8. Dé los números de su personal contratado o que trabaja por cuent propia en relanción a las siguientes categorías.

(For each of the following employment categories, give the numbers in your workforce, both self-employed and hired)

	Hombres (Men)		Mujeres (Women)	
	Número	Persona-meses	Número	Persona-meses
Jornada completa (Full-time)	_____	_____	_____	_____
Por horas (Part-time)	_____	_____	_____	_____
Temporal (Temporary)	_____	_____	_____	_____
Estacional (Seasonal)	_____	_____	_____	_____

¿Cuántos son miembros de la familia y cual es su relación?

(How many are family members and what is their status?)

	Jornada completa	Por horas	Temporal	Estacional
Padre	_____	_____	_____	_____
Madre	_____	_____	_____	_____
Hijos barones	_____	_____	_____	_____
Hijas	_____	_____	_____	_____
Otros (primos, sobrinos, etc.)	_____	_____	_____	_____

9 **¿Cuántos miembros de su personal en cada categoría están activamente dedicados ala agricultura? Es para ellos el empleo en su compañía una fuente de ingreso primario o secundario?**

(How many members in each category of your workforce are actively involved in farming? Is the position with your firm their primary employment or a secondary source of income?)

		Categoría del empleo (Job category)	
	Número	Primario	Secundario
Jornada completa (Full-time)	_____	_____	_____
Por horas (Part-time)	_____	_____	_____
Temporal (Temporary)	_____	_____	_____
Estacional (Seasonal)	_____	_____	_____

10 **¿Participa su empresa en algún curso educacional o de entrenamiento, y cuál es costo?**

(Does your firm participate in any educational or training courses, and the cost?)

		Costo ($N ó porcentage de ventas)
Sí	___	_____
No	___	

Si la respuesta es sí, cuáles son y cuántos empleados participaron en 1993? (describa cada uno de ellos y el número de empleados que participaron, incluyendo administradores).

(If yes, what are they and how many employees were involved in 1993? (describe each and number of employees involved, management too))

Curso/entrenamiento (Course/training)	Número de empleados (Employee Numbers)
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

11 **En la escala de 1 a 5, durante el proceso de producción de su producto(s) o servicio(s), ¿cómo calificaría usted la necesidad de la habilidad y de talento de sus empleados?**

(On a scale of 1 -5, in the process of producing your good(s) or service(s), how would you rate the need for the skill and talent abilities of your employees?)

	Escala (1 a 5)
Habilidad (Skill)	_____
Talento (Talent)	_____

C. Vínculos Regresivos

(Backward Linkages)

12. ¿Cuál es el costo de sus insumos materiales (no los empleados ni administración, costos de operación, etc.) como porcentaje de venta? _____%

(What is the cost of your material inputs (not employees, administration, operating expenses, etc.) as a percentage of sales?)

En este estudio se están analizando cuatro áreas de comercio. Ellas son:

Local - definida como dentro de 25 km de su compañía.

Comercio con el resto de Sonora - comercio dentro de Sonora pero afuera del área local.

Comercio interestatal - comercio dentro de las fronteras de México peron afuera de las fronteras de Sonora.

Comercio internacional - comercio afuera de las fronteras de México.

(Four areas of trade are being analyzed in this study. They are:

Local - defined as within 25 kilometres of your firm.

Trade with rest of Sonora - trade within Sonora but outside of the local area.

Interprovincial trade - trade within the boundaries of the Mexico but outside the boundaries of Sonora.

International trade - trade outside the borders of Mexico.)

13. ¿De dónde obtiene los insumos para su compañía y qué porcentaje del costo total de insumos recibe cada uno? ¿Cuándo ocurrió el cambio hacia un área diferente?

(Where do you obtain inputs for your business and what percentage of the total cost of inputs does each receive? When did each a move to a different area occur?)

	Porcentaje del costo total (Percentage of total cost)	**Año del cambio** (Year of change)
Localmente (Locally)	_____	19____
Dentro del resto de Sonora (Within rest of Sonora)	_____	19____
Comercio interestatal (Interstate trade)	_____	19____
Internacionalmente (Internationally)		
Estados Unidos	_____	19____
Canadá	_____	19____
otros (especifique: _____)	_____	19____

14. **¿Cómo encontró/desarrolló a los abastecedores y cómo se relacionan con el área de comercio?**

(How was the supplier(s) found and/ or developed and how do these relate to the area of trade?)

	Local	Sonora	Interestatal	Internacional
Contacto personal (Personal contact)	_____	_____	_____	_____
Agluno de los medios de comunicación (A form of mass media)	_____	_____	_____	_____
Agencia de mercadeo (Marketing agency)	_____	_____	_____	_____
Agencia de gobierno (Government agency)	_____	_____	_____	_____
Otro (Other)	_____	_____	_____	_____

Desea ampliar lo anterior?

(Any elaboration?)

_____

_____

_____

_____

_____

_____

¿Existe alguna clase de relación de negocios con sus abastecedores?

(Are there any kind of business relationships with your suppliers?)

¿Si? _____

¿No? _____

¿En caso de ser sí, ¿ de qué tipo?

(If yes, what type?)

	Local	Sonora	Interestatal	Internacional
Ninguna	_____	_____	_____	_____
Cooperativa	_____	_____	_____	_____
Concesionario	_____	_____	_____	_____
Agente	_____	_____	_____	_____
Propiedad comapartida (Shared Ownership)	_____	_____	_____	_____
Propiedad total (Full Ownership)	_____	_____	_____	_____

Los costos de transacción resultan del hecho de hacer negocios. Estos incluyen los costos de una gran variedad de servicios, impuestos, tarifas y seguros. Algunos pero no todos, son los costos de tranporte, seguros, empacado, ordenes, establecimiento y ajuste de especificaciones de los productos, control de calidad, saldado de cuentas, reclamos por artículos deñados, y derechos de aduana e impuestos.

(Transactions costs result from the act of conducting business. They encompass costs of a wide range of services, taxes, tariffs and insurance. Several, but by no means all, are the costs of transport, insurance, packaging, ordering, setting and adjusting product specifications, quality control, clearing accounts, recourse on damage goods and customs and excise.)

¿Qué función han tenido los costos de transacción en la formación de sus areglos con sus abastecedores?

(What role has the cost of transactions played in forming your supplier arrangements?)

D. Vínculos Progresivos

(Forward Linkages)

15. ¿Cuál es la participación en su porcentaje de ventas de cada zona de comercio y cuándo ocurrieron los cambios a otra zona?

What percentage of your sales is involved in each trading zone and when did shifts to another zone occur?

	Porcentaje (Percentage)	**Año de cambio** (Year of shift)
Localmente (Locally)	_____	19____
Dentro del resto de Sonora (Within rest of Sonora)	_____	19____
Comercio interestatal (Interstate trade)	_____	19____
Internacionalmente (Internationally)		
Estados Unidos	_____	19____
Canadá	_____	19____
otros (especifique:_____)	_____	19____

14. **¿Cómo encontró/desarrolló el mercado y cómo se relaciona esté con el área de comercio?**

(How was the market(s) found and/ or developed and how do these relate to the area of trade?)

	Local	Sonora	Interestatal	Internacional
Contacto personal (Personal contact)	_____	_____	_____	_____
Agluno de los medios de comunicación (A form of mass media)	_____	_____	_____	_____
Agencia de mercadeo (Marketing agency)	_____	_____	_____	_____
Agencia de gobierno (Government agency)	_____	_____	_____	_____
Otro (Other)	_____	_____	_____	_____

Desea ampliar lo anterior?

(Any elaboration?)

_____

_____

_____

_____

_____

_____

17. ¿Existe alguna clase de relación de negocios con sus compradores?

(Are there any kind of business relationships with your suppliers?)

¿Sí? _____

¿No? _____

¿Qué tipo de relaciones de negocios están involucradas en estas relaciones de mercadeo?

(What type of business relationship is in these marketig relationships?)

	Local	Sonora	Interestatal	Internacional
Ninguna	_____	_____	_____	_____
Cooperativa	_____	_____	_____	_____
Concesionario	_____	_____	_____	_____
Agente	_____	_____	_____	_____
Propiedad comapartida (Shared Ownership)	_____	_____	_____	_____
Propiedad total (Full Ownership)	_____	_____	_____	_____

¿Qué función han tenido los costos de transacción en la formación de sus arreglos de mercadeo?

(What role has the cost of transactions played in forming your marketing arrangements?)

_____

_____

_____

_____

_____

_____

E. Expansión, Derechos de Propiedad y Derechos de Acreditación

(Expansion, Property Rights and Entitlements)

18. Si esta firma piensa expandirse, porqué (escoja de la lista)?

(If this firm anticipates expanding, why (choose from the list)?)

Si no, porqué no?

(If not, why not?)

a. Garantiza abastecimiento _____

(Guarantee supply)

b. Gana participación _____

(Gain marketshare)

c. Elimina a los competidores _____

(Eliminate competitors)

d. Otro _____

(Other)

e. Otro _____

(Other)

Desea ampliar lo anterior?

(Any elaboration?)

_____

_____

_____

_____

_____

_____

19. ¿Cuáles son algunos de los obstáculos que impiden que su compañía avance hacia nuevas áreas de comercio (escoja de la lista y deles un valor) y cuál es el costo asociado con cada uno de ellos?

(What are some obstacles that prevent your firm from moving into new trade areas (choose from list and rank them) and what is the cost associated with each?)

	Obstáculo	Rango	Costo de transacción
a.	Contactos (Contacts)	____	_____
b.	Distancia (Distance)	____	_____
c.	Imposibilidad de consiguir financiamiento (Inability to obtain financing)	____	_____
d.	No desea usa financiameinto de deudas o de fondos (Unwilling to use debt or equity financing)	____	_____
e.	Información (Information)	____	_____
f.	Insumos (Inputs)	____	_____
g.	Indioma (Language)	____	_____
h.	Arranglos de mercado (Market arrangements)	____	_____
i.	Factores personales (Personal factors)	____	_____
j.	Protección de la identidad de la compañía (Protection of firm's identity)	____	_____
k.	Protección de llos fondos de la compañia (Protection of firm's equity)	____	_____
l.	Tecnologia (Technology)	____	_____
m.	Confianza (Trust)	____	_____
n.	Fuerza laboral (Workforce)	____	_____
o.	Otro	____	_____
p.	Otro	____	_____
q.	Otro	____	_____

El derecho de la propiedad y los derechos al beneficio económico, control y administración del negocio son vitales para compartir los retornos financieros en las alianzas de negocios.

(The right of ownership and the entitlements to the economic outcome, control and management of the business are vital to the sharing of financial returns in alliances.)

20. **¿Es posible expandir este negocio por medio de la alianzas y seguir manteniendo este derecho de propiedad o es éste necsario? Cómo se podría hacer esta formación de alianzas?**

(Is it possible to expand this business through alliances and still maintain these right of ownership or is this necessary? How would this alliance building be done?)

_____

_____

_____

_____

_____

_____

21. **¿Es posible expandir este negocio por medio de una alianza para conseguir acceso a los derechos para participar en las intervenciones y programas del gobierno (por ej: cuotas, rentas, zonificación, incentivos, donaciones)? ¿Cómo?**

(Is it a possibility to expand this business through an alliance to obtain access to entitlements to government interventions and programs (e.g . quotas, leases, zoning, incentives, grants)?) How?

_____

_____

_____

_____

_____

_____

Appendix 3

Sonora Employee Questionnaire

Cuestionario para Empleados Comerciales Rurales de Sonora

David Fullerton

Departmento de Economia Rural
Universidad de Alberta
Edmonton, Alberta, Canada

12 de agosto de 1994

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Cuestionario para Empleados Comerciales Rurales de Sonora

Sonora Rural Tradables Employee Questionnaire

Fecha: _____/94

(Date)

Nombre de la Compañía: _____

1. ¿Cuál es su sexo?

(What is your gender?)

Masculino _____

Femenino _____

2. ¿Cuál es su edad? _____

(What is your age?)

3. Donde vive usted (el pueblo o aldes más cercano)? _____

(Where do you live (nearest town or village)?

4. ¿Cuál es su ni vel más alto de educación formal? _____

(What is the highest level of formal education you have attained?)

Primaria _____
(Elementary)

Secundaria básica _____
(Juniour high school)

Secundaria completa _____
(Secondary high school)

Instituto Vocacional (técnico) _____
(Vocational (technical) college)

Universidad **Liceniatura** _____
(Bachelor)

Escuala Graduada _____
(Graduate)

Post-Grado _____
(Post Graduate)

5. **¿Qué tipo de educación no-formalha tenido?**

(What type of non-formal means of education have you done?)

Educación continuada _____

(Continuing education)

Relacionada con el trabajo _____

(Job-related)

Las siguientes preguntas se hacen para determinar las fuentes y magnitudes de cada fuente de ingreso:

(The following questions are used to determine the sources and magnitude of each source of income:)

6. **¿Cuáles son las fuentes y niveles de ingreso que tiene usted?**

(What are the sources and the levels of income that you earn?)

		Descripción del Empleo (Employment Description)	Tasa de salario (Wage Rate)	Nivel de Ingreso (Income Level)
a.	Principal	_____	_____	_____
b.	Segundo	_____	_____	_____
c.	Tercero	_____	_____	_____
d.	Cuarto	_____	_____	_____
e.	Quinto	_____	_____	_____

7. **En el ingreso total de su hogar, en qué porcentaje contribuye al mantenimiento de su hogar cada una de las posiciones de empleo mencionadas auteriormente?**

(In the total household income, what percentage does each of the above employment positions contribiute to sustaining your household?)

		Porcentaje
a.	Principal	_____
b.	Segundo	_____
c.	Tercero	_____
d.	Cuarto	_____
e.	Quinto	_____

8. **¿Cuál es el compriso de trabajo para cada una de esas posiciónes? (Escoja una categoria para cada posición)**

(What is the employment commitment of each of these position (choose one category for each position)?)

	Tiempo Completo (Full-time)	Tiempo Parcial (Part-time)	Temporal (Temporary)
a. Principal	_____	_____	_____
b. Segundo	_____	_____	_____
c. Tercero	_____	_____	_____
d. Cuarto	_____	_____	_____
e. Quinto	_____	_____	_____

9. **¿Qué beneficios, aparte del salario, recibe de cada posición de empleo?**

(What benefits, other than a wage, do you receive from each employment position?)

Beneficio

a. Principal _____

_____

b. Segundo _____

_____

c. Tercero _____

_____

d. Cuarto _____

_____

e. Quinto _____

_____

Appendix 4

Tradable Firms Descriptive Statistics

Table A4a. Descriptive statistics of tradable firms categorised as all firms, Group 1 firms and Group 2 firms, Alberta, 1994.

All Firms: Alberta

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGE	21	10	7	50	2	26
GS	21	569,050	537,230	3E+11	50,000	2,250,000
PA	21	340,480	354,830	1E+11	50,000	1,250,000
TA	21	283,330	290,400	8E+10	50,000	1,250,000

Group 1 Firms: Alberta

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGEL	11	10	7	48	2	26
GS	11	195,450	129,330	2E+10	50,000	350,000
PA	11	168,180	153,740	2E+10	50,000	450,000
TA	11	122,730	100,900	1E+10	50,000	350,000

Group 2 Firms: Alberta

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGEG	10	10	8	56	2	23
GS	10	980,000	514,350	3E+11	550,000	2,250,000
PA	10	530,000	421,110	2E+11	50,000	1,250,000
TA	10	460,000	331,490	1E+11	50,000	1,250,000

Variable Codes:

GS - Gross Sales

PA - Physical Assets

TA - Talent Assets

FAGE - Firm Age (all firms)

FAGEL - Firm Age (Group 1)

FAGEG - Firm Age (Group 2)

Table A4b. Descriptive statistics of tradable firms categorised as all firms, Group 1 firms and Group 2 firms, Nebraska, 1994.

All Firms: Nebraska

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGE	21	24	24	559	1	109
GS	21	1,978,900	2,334,900	5E+12	67,683	6,768,300
PA	21	892,770	1,338,600	2E+12	67,683	5,753,100
TA	21	783,190	924,210	9E+11	67,683	3,722,600

Group 1 Firms: Nebraska

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGEL	9	21	33	1,119	1	109
GS	9	127,850	98,341	1E+10	67,683	338,420
PA	9	172,970	147,940	2E+10	67,683	473,780
TA	9	127,850	98,341	1E+10	67,683	338,420

Group 2 Firms: Nebraska

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGEG	12	26	14	194	5	47
GS	12	3,367,200	2,235,900	5E+12	879,880	6,768,300
PA	12	1,432,600	1,581,200	3E+12	67,683	5,753,100
TA	12	1,274,700	964,910	9E+11	67,683	3,722,600

Variable Codes:

GS - Gross Sales

PA - Physical Assets

TA - Talent Assets

FAGE - Firm Age (all firms)

FAGEL - Firm Age (Group 1)

FAGEG - Firm Age (Group 2)

Table A4c. Descriptive statistics of tradable firms categorised as Group 1 firms, Sonora, 1994.

Group 1 Firms: Sonora

NAME	N	MEAN	ST. DEV	VARIANCE	MINIMUM	MAXIMUM
FAGE	12	14	14	204	2	42
GS	12	116,300	151,750	2E+10	13,043	469,570
PA	12	183,700	287,840	8E+10	13,043	991,300
TA	12	52,174	54,494	3E+09	13,043	156,520

Note: For reasons of confidentiality, results for Sonora Group 2 cannot be reported.

Variable Codes: GS - Gross Sales

PA - Physical Assets

TA - Talent Assets

FAGEL - Firm Age (Group 1)

Appendix 5

Tradable Firm Employment: Numbers

Table A5. Numbers of People Employed in Tradable Enterprises in Alberta, Nebraska and Sonora Study Areas, 1994.

		Numbers Employed		
		Group 1	Group 2	Total
Alberta				
Male:	Full-time	20	73	93
	Part-time	11	4	15
	Temporary	3	4	7
	Seasonal	6	11	17
	subtotal	40	92	132
Female:	Full-time	13	23	36
	Part-time	9	10	19
	Temporary	0	2	2
	Seasonal	5	10	15
	subtotal	27	45	72
	Total	67	137	204
Nebraska				
Male:	Full-time	16	98	114
	Part-time	9	16	25
	Temporary	0	0	0
	Seasonal	2	4	6
	subtotal	27	118	145
Female:	Full-time	3	54	57
	Part-time	12	13	25
	Temporary	2	0	2
	Seasonal	6	0	6
	subtotal	23	67	90
	Total	50	185	235
Sonora				
Male:	Full-time	97	-	97
	Part-time	4	-	4
	Temporary	4	-	4
	Seasonal	0	-	0
	subtotal	105	-	105
Female:	Full-time	132	-	132
	Part-time	0	-	0
	Temporary	0	-	0
	Seasonal	0	-	0
	subtotal	132	-	132
	Total	237	-	237

Note: Due to confidentiality restrictions, results for Sonora Group 2 cannot be reported.

Appendix 6

Tradable Firm Employment: Person-months Employed

Table A6. Numbers of Person-months Employed in Tradable Enterprises in Alberta, Nebraska and Sonora Study Areas, 1994.

		Person-months		
		Group 1	Group 2	Total
Alberta				
Male:	Full-time	240.0	876.0	1116.0
	Part-time	43.7	21.9	65.6
	Temporary	15.0	8.0	23.0
	Seasonal	30.0	42.8	72.8
	subtotal	328.7	948.7	1277.4
Female:	Full-time	154.0	276.0	430.0
	Part-time	27.5	42.0	69.5
	Temporary	0.0	4.0	4.0
	Seasonal	28.0	40.8	68.8
	subtotal	209.5	362.8	572.3
	Total	538.2	1311.5	1849.6
Nebraska				
Male:	Full-time	192.0	1176.0	1368.0
	Part-time	59.9	48.4	108.3
	Temporary	0.0	0.0	0.0
	Seasonal	7.0	10.5	17.5
	subtotal	258.9	1234.9	1493.8
Female:	Full-time	36.0	648.0	684.0
	Part-time	53.5	67.1	120.6
	Temporary	1.2	0.0	1.2
	Seasonal	13.0	0.0	13.0
	subtotal	103.7	715.1	818.8
	Total	362.6	1950.0	2312.6
Sonora				
Male:	Full-time	1125.5	-	1125.5
	Part-time	39.0	-	39.0
	Temporary	4.8	-	4.8
	Seasonal	0.0	-	0.0
	subtotal	1169.3	-	1169.3
Female:	Full-time	1584.0	-	1584.0
	Part-time	0.0	-	0.0
	Temporary	0.0	-	0.0
	Seasonal	0.0	-	0.0
	subtotal	1584.0	-	1584.0
	Total	2753.3	-	2753.3

Note: Due to confidentiality restrictions, results for Sonora Group 2 cannot be reported

Appendix 7

Categorization of Obstacles To Expansion Into Alliances.

The obstacles selected for use in the questionnaire were determined using the theoretical framework and previous experience of the author and supervisor. The respondents were also allowed to include any others they determined to be constraining their unique situation. These were then included in the following categorization. Not all obstacles are included in the alliance categorization because alliances do not present a means to overcome all of the obstacles mentioned in the questionnaires.

Alliance	Obstacle
Financial	Financing
	Unwilling to use debt or equity financing
	Unable to obtain debt or equity financing
	Protection of firm's equity
Process	Inputs
	Capacity constraints
	Technology
Strategic	Distance
	Regulations
	Market arrangements
	Contacts
	Trust
	Information
	Time constraints
	Trade programs
	Protection of firm's identity
	Limited demand
	Market staying power
	Language
	Tax structure